THE

AMERICAN

JOURNAL OF INSANITY.

EDITED BY THE

MEDICAL OFFICERS OF THE NEW YORK STATE LUNATIC ASYLUM.

VOL. XXIX. 1872-73

The care of the human mind is the most noble branch of medicine.—GROTIUS.

STATE LUNATIC ASYLUM.
UTICA, NEW YORK.
1872-3.

5 N

ROBERTS & CO., PRINTERS,
HERALD OFFICE, UTICA.

INDEX TO VOL. XXIX.

PAGE.

A Year Book of Therapeutics, Pharmacy, &c., Review of,.... 108
A Treatise on Diseases of the Bones, Review of,..... 111
A Study of Some Points in Pathology of Cerebral Hæmorrhage, Review of,..... 290
Additional Asylums in Tennessee,..... 597
Andrews, Judson B., Dr., Report of Needle Case,..... 13
Annual Convention of the Connecticut Medical Society, Notice of,..... 445
Appointment of Dr. J. K. Bauduy,..... 135
Appointment of Dr. John H. Callender,..... 135
Appointment of Dr. T. A. Howard,..... 135
Appointment of Dr. B. D. Eastman,..... 135
Appointment of Prof. John Ordronaux, M. D., LL. D.,..... 135
Appointment of Dr. Albert Reynolds,..... 312
Appointment of Dr. James H. Denney,..... 452
Appointment of Dr. Walter Kempster,..... 452
Appointment of Dr. Joseph Draper,..... 596
Appointment of Dr. W. S. Chipley,..... 596
Appointment of Dr. W. S. Whitwell,..... 597

Brain, Function of, by Claude Bernard,..... 21
Buffalo State Asylum, its History and Description,..... 1
Burning of the Northern Ohio Lunatic Asylum,..... 306

Causation of Insanity, Thoughts on, &c.,..... 264
Case of Excessive Hypodermic Use of Morphia,..... 13
Case of Disease of Brain—Left Hemiplegia,..... 132
Circular from Iowa Hospital for Insane,..... 312

QG698 Am 206949 616.05 #5121

Conium in the Treatment of Acute Mania, by Crichton Browne, M. D.,..... 118
Conium in the Treatment of Insanity, by Daniel H. Kitchen, M. D.,..... 457
Contributions to Mental Pathology, Review of,..... 590
Correction of Statement regarding Rulloff,..... 136
Criminal Responsibility of Epileptics,..... 341

Electricity and Life—Fernand Papillon,..... 480
Epileptics, Criminal Responsibility of, M. G. Echeverria, M, D. 341
Epileptics, Violence and Unconscious State of, by M. G. Echeverria, M. D.,..... 508
Evolution, Theories of, No. III., ... 39

Function of the Brain. Claude Bernard,..... 21

Gray, John P., M. D., Thoughts on Causation of Insanity,... 264

"Habeas Corpus," Confinement of Sane persons in Asylums, 302

Illustrations of the Influence of the Mind upon the Body in Health and Disease, Review of,..... 296
Impairment of Language the Result of Cerebral Disease, Review of,..... 449
Is Insanity a Disease of the Mind or of the Body? T. H.,.... 71

Kitchen, Daniel H., Dr., Conium in the treatment of Insanity, 457

Laying of the Corner Stone of the Buffalo State Asylum,.... 309
Lectures on Aural Catarrh, &c., Review of,..... 108

Medical Responsibility and Malpractice, Notice of,..... ... 448
Message of Gov. Conrad Baker of Indiana, Extract from,.... 448
Montgomery, David, Case of, M. G. Echeverria, M. D.,..... 341
Moral Insanity. John Ordronaux, M. D., L. L. D.,..... 313

Names and Address of Members of the Association,.....454, 598
New Insane Asylum in California, ... 307

New Treatment of Venereal Diseases, &c., by Iodoform, Review of,..... 446
Northern Ohio Lunatic Asylum, Burning of,..... 306
Notices of Transactions, Reports and Pamphlets,..... 116
Notices of Pamphlets,..... 451
Notice of Meeting of Association,..... 597

On Cerebria and other Diseases of the Brain, Review of,..... 286
On Epilepsy, M. G. Echeverria, M. D., Review of,..... 283
On Hereditary Transmission of Structural Peculiarities, Review of,..... 446
On the Physiology of Syphilitic Affections, Review of,..... 447

Physiology, Function of the Brain,..... 21
Plan of the New Asylum, Worcester, Mass.,..... 453
Proceedings of Association of Superintendents,..... 137
Promotion of Dr. Daniel H. Kitchen,..... 597
Pyschological Medicine in our Public Schools, Dr. C. H. Hughes,..... 134
Psychological Retrospect, English,..... 557
Puncture of the Bladder, by Dieulafoy's Aspirator, Notice of,. 448

Report of Commission to Investigate Charges against Bloomingdale Asylum,..... 590
Resignation of Dr. C. H. Hughes,..... 135
Resignation of Dr. Merrick Bemis,..... 135
Resignation of Dr. John S. Butler,..... 453
Resignation of Dr. William H. Rockwell,..... 596
Review of American Asylum Reports,.....92, 427
Review of Foreign Asylum Reports,.....102, 298, 443

State Provision for the Insane: Buffalo State Asylum,..... 1
Skin Diseases, their Description, Pathology, Diagnosis and Treatment, Review of,..... 107

Three Hundred Needles from the body of an Insane Woman, 13
Theories of Evolution, No. III.,..... 39

The Treatment of Venereal Disease, Review of,..... 106
The Physiological and Therapeutic Action of Bromide of Potassium and Bromide of Ammonium, Review of,..... 109
Third Annual Report of the State Board of Health of Massachusetts, 1871, Review of,..... 113
Thoughts on the Causation of Insanity,..... 264
Transactions of the State Medical Society of Michigan,..... 300
Transactions of the Minnesota State Medical Society, ... 445
Transactions of the Indiana State Medical Society,..... 301

Violence and Unconscious State of Epileptics in their relation to Medical Jurisprudence,..... 508

Wharton and Stillé's Medical Jurisprudence, Review of,..... 426
Works of Sir James Y. Simpson, Review of,..... 112

AMERICAN

JOURNAL OF INSANITY,

FOR JULY, 1872.

STATE PROVISION FOR THE INSANE.

BUFFALO STATE ASYLUM—ITS HISTORY AND DESCRIPTION.

In July, 1797, the New York Hospital, located in the city of New York, first received insane patients, and in 1821, the Bloomingdale Asylum, the insane department of the Hospital, was completed. This received aid from the State, and accommodated a limited number of indigent patients. In 1830, the first steps were taken which eventuated in the erection of the New York State Lunatic Asylum, at Utica. This was opened in 1843. In 1852, further accommodations were demanded, and Governor Seymour embodied in his annual message a recommendation for the erection of another State Asylum. In 1856, the superintendents of the poor presented a memorial to the Legislature, recommending, "that your honorable body will at once cause the immediate erection of *two State Lunatic Hospitals*, so located that they may accommodate the largest number of insane, *at present unprovided for*."

A committee was appointed to report upon the condition of the insane poor then confined in the county houses, and receptacles and recommended "the estab-

lishment of two or more asylums for the insane, in addition to the existing asylums, and to be under similar management with the State Asylum," and presented a bill for the immediate location of one such asylum east, and one west of Utica. This measure failed of success at that time, but it has been the basis of the subsequent exertion and action of those interested in the welfare of the insane and of the Legislature; and at length the adoption of this plan then recommended has been secured.

In 1864, the Legislature directed further inquiry, and under its enactment Dr. S. D. Willard, as Secretary of the State Medical Society, and Surgeon-General of the State, arranged a report from materials furnished by physicians in each of the different counties, setting forth the condition of the insane then kept in the county houses. He recommended in this report to the Legislature the establishment of an institution for the care of the incurable insane. At the same session in 1865, a bill was introduced, providing for the erection of two asylums of a similar character to the State Asylum, one to be located east and one west of Utica, which was referred to a committee and reported favorably upon. This bill was subsequently modified, so as to provide for the erection of one institution entitled, the "Beck Asylum for the Chronic Insane," who are paupers, in honor of Dr. T. Romeyn Beck. While the bill was on its passage, Dr. Willard died, and the name was changed to the "Willard Asylum for the Chronic Pauper Insane." Its erection has steadily progressed, and for two years past it has been receiving patients of the class designated by law, as parts have been successively completed. This in no way obviated the necessity or abated the efforts to carry out the original design to care for *all* of the insane, and in 1867, a bill was passed organizing a second

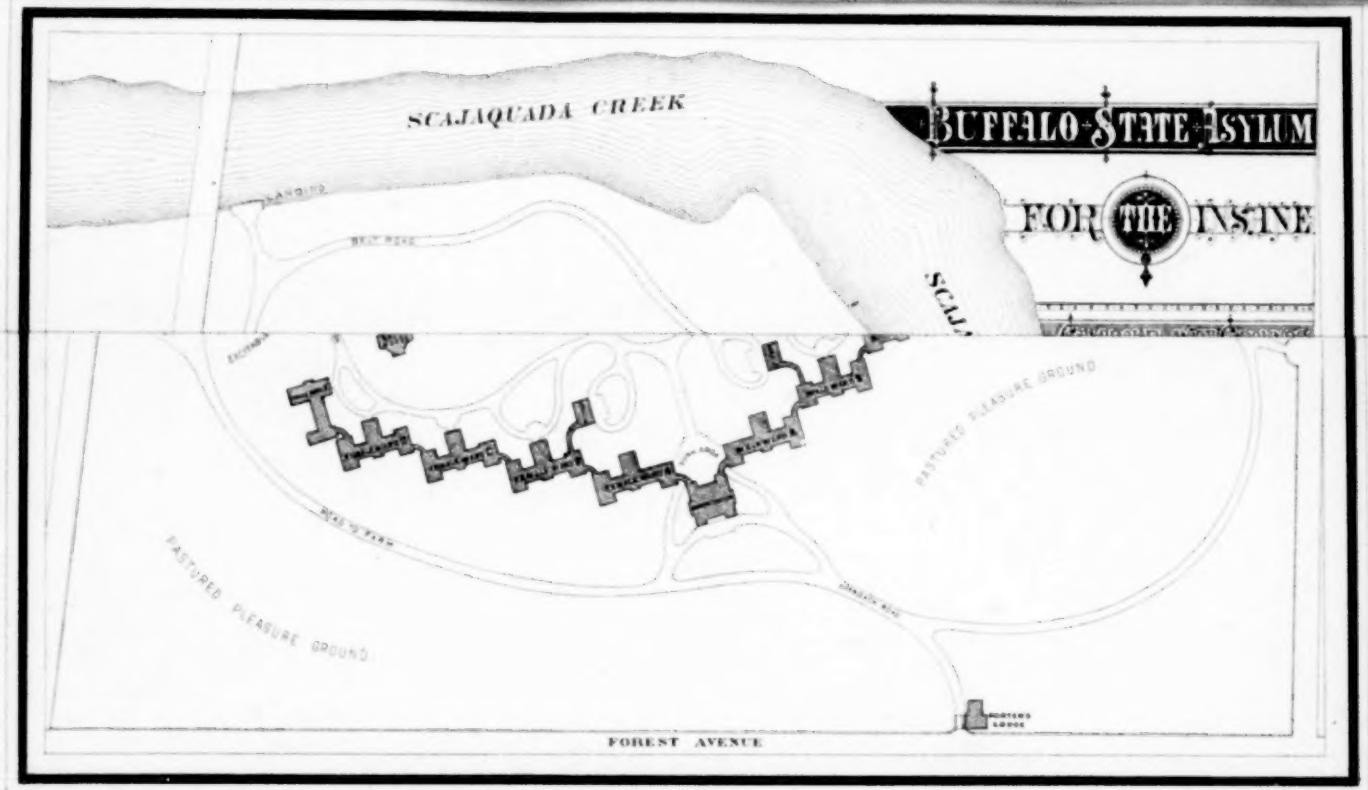
State Asylum. This was located at Poughkeepsie, and designated the "Hudson River Hospital for the Insane." It is now open for the reception of patients, in the portion already constructed.

In further pursuance of this policy, the Legislature passed an act on the 13th of March, 1869, by which the Governor was authorized to appoint five commissioners to select a suitable site in Western New York, in the Eighth Judicial District, on which to erect an asylum for the insane. "The said commissioners shall have power to receive by gift, or to contract for the purchase of such site for the location of said asylum, subject however, to the approval of the next Legislature, to whom they shall report their action in the premises within ten days after the commencement of the session." Dr. John P. Gray, of Utica; Dr. James P. White, of Buffalo; Dr. Milan Baker, of Warsaw; Dr. Thomas D. Strong, of Westfield; and Dr. William B. Gould, of Lockport, were appointed commissioners, and formally organized at Buffalo, on the 15th of July, 1869, with Dr. Gray as chairman.

Invitations were received to visit various places within the district, to examine the locations presented. The action of the board was based upon the requisites demanded for the location of an asylum, as set forth in the propositions adopted by the "Association of Medical Superintendents of Institutions for the Insane." It was further resolved that no site should be chosen of less than two hundred acres of land; that it should be located where an abundant and reliable supply of water could at all times be obtained; and that in the examination and final determination, a site containing the greatest practical and substantial advantages should be selected. The commissioners met on the 5th of October, and between that date and the 16th, examined the

various sites presented. Propositions containing a full description of the property and specifications of the cost of building materials and supplies, addressed to the commissioners, were required to be in writing.

After a careful review of the sites offered and the advantages of each, it was unanimously determined that it would be for the interest of the State and the welfare of the insane, and to the success of the institution, to locate it in Buffalo, upon conditions proposed by the city, and substantially as follows: "That the property mentioned and referred to in the proposals received from said city, containing two hundred acres more or less, shall be gratuitously conveyed and donated by a full covenant warranty deed to the State of New York, for the purposes of said insane asylum." "That the said city will guarantee to the State of New York, a free perpetual right and privilege to use from the water works of the city, whatever water may be required for the purposes of said asylum, without any compensation therefor and will covenant on its part that such gratuitous right and privilege shall never be revoked, withdrawn or rescinded." The city also agreed to lay main pipes of size sufficient to furnish all the water required for the asylum, as soon as work should be commenced on the foundations. The propositions were accepted by the commissioners, to take effect after the passage of an act by the Legislature authorizing the city to make the purchase and conveyance. A report of these proceedings, with the recommendation of the commissioners, was made to the Legislature during the session of 1870 and their action was approved. On the 23d of April, the act to establish the asylum in the city of Buffalo was passed. This authorized the Governor to appoint by and with the consent of the Senate, ten managers for the "Buffalo State Asylum for the Insane," and



Lithed' Wolfe & Bingham Buffalo N.Y.

designated their respective terms of office. The law organizing and governing the State Asylum at Utica, was made applicable to this institution, and an appropriation of $50,000 was made, subject to the provision that none of it should be expended except for plans and specifications to be on the basis of 500 patients.

The managers appointed were: John P. Gray, Utica; Asher P. Nichols, Buffalo; William B. Gould, Lockport; Lorenzo Morris, Fredonia; Augustus Frank, Warsaw; and Albert P. Lanning, William G. Fargo, George R. Yaw, James P. White, and Joseph Warren, all of Buffalo. The board met at Buffalo on the 26th of May, 1870, and formally organized by the appointment of Dr. James P. White as President; and a committee was appointed to procure plans, drawings and specifications for the proposed building. In this condensed history of provision for the insane, terminating in the establishment of the Buffalo State Asylum, we see the success of the proposition made in 1855, to erect "two State Lunatic Asylums, so located that they may accommodate the largest number of insane, at present unprovided for." This object has been steadily kept in view by the advocates of the measure, and they have by earnest and persistent effort attained a result which will promote the true interest of the insane, and do credit to the humanity and generosity of the State.

LOCATION AND PLAN OF GROUNDS.

From the first annual report, we learn that the Asylum is located upon a farm of two hundred acres of unbroken land, situated in the western part of Buffalo, some three miles from the centre of the city. The land is bounded on the north by the Scajaquada Creek, a tributary of the Niagara River; on the south by Forest

Avenue; on the east by the line of Elmwood Avenue, and on the west by the City Park. Upon Forest Avenue it has a frontage of some three thousand feet. The natural surface of the ground is undulating, and portions of it are traversed by several ravines, which cross it generally from east to west. On the south east part of the grounds is a fine grove of trees, principally oak and maple. There are also several springs, one of which has long been noted for its mineral qualities. Much of the surface is underlaid with rock, and clay of good quality is abundant. The Asylum grounds, as presented in the plan, were laid out and will be improved under the direction of Mr. Fred. Law Olmsted, the celebrated landscape architect.

The building will have a southern exposure, and front upon Forest Avenue. It will overlook the city, the Niagara River, and have a distant view of Lake Erie, and will present a fine architectural perspective from the park and its approaches. It is situated within a short distance of a depot of the New York Central Railway, and is easily reached by lines of street railroad. The beauty and natural advantages of the location, in its diversified scenery, ease of drainage, readiness of obtaining material and supplies, and of access from all directions, show the wisdom and foresight of the commissioners who selected it. The generosity of the city of Buffalo, in giving to the State such a tract of land, and in binding itself to furnish a perpetual and full supply of water free of cost, should not be overlooked and can not be too highly appreciated.

On the 25th of August, 1870, a sketch of the ground plan, devised by Dr. Gray, of the committee on plans and specifications, was unanimously adopted by the board and approved by the State officers in accordance with legislative enactment.

GENERAL PLAN
OF THE
BUFFALO STATE ASYLUM FOR THE INSANE.
Scale =
REFERENCES
CENTRE BUILDING
WARDS
KITCHENS

Subsequently, the elevation and plan presented by H. H. Richardson, of New York City, was accepted, and he was appointed architect, and A. J. Warner, of Rochester, supervising architect.

GROUND PLAN OF THE BUILDING.

This plan, a lithographic plate of which we present, provides for a central or administration building, with wards for patients extending from either side, and for other necessary buildings, as kitchen, bakery, laundry, engine-house, &c., &c.

The central structure is to contain on the first floor, in front, the officers' dining room, a reception room or public parlor, a general office, and a medical office; in the rear of the central hall a library, apothecary's shop, steward's office, stairway, matron's store room and matron's office. The wings on either side will consist of five separate buildings, containing eleven wards for each sex.

They are connected with the centre, and the separate buildings with each other, by fire proof corridors inclosed on all sides. These corridors are built upon the arc of a circle with the concavity to the front. The buildings recede till the extreme end of the last one, on either side, is about three hundred feet from the rear of the administration building. The general plan of the wards corresponds in the main with the 25th proposition of the report of the Association of Superintendents on the construction of hospitals, and this Institution is the first and only one in which the principle has been fully carried out. The rooms are placed upon one side only of the hall of each ward, and as the building, as before stated, has a southern exposure, and the windows are large and numerous, the wards are most favorably arranged for light and thorough ventilation. The

hall itself is broad, and from its position, cheerful and pleasant, and will serve for a recreation and general public room for the patients. A wing is projected to the rear from the centre of each ward. This has a central hall, with sleeping rooms on both sides, and is separated from the ward by a door. In the rear projection toward the connecting corridors, are located the general service rooms, as bathing, clothing, washing-rooms, closets, &c. There is also a dining-room, attendants' room, dormitory and parlor for each ward, conveniently arranged for the purposes for which they are to be used. A room is also provided for special cases, which from sickness or other causes demand extra care or accommodation. The capacity of each ward is adapted to the proportionate number which each class of patients bear to the whole number to be treated in the Institution.

There are several advantages in the plan adopted for this hospital over the rectangular, and also over the ordinary linear plan with return wings :

First.—In the more complete separation of the buildings, which insures better protection against the destruction of the institution by fire.

Second.—In affording more sun-light upon a greater portion of the building.

Third.—It facilitates a better circulation of air between and around the buildings.

Fourth.—It gives the opportunity for better classification.

(*a.*) By separating more completely the various classes, from the quiet to the most disturbed.

(*b.*) By extending the out-look from the buildings, classes do not overlook each other.

(*c.*) It promotes quietness in all the wards, and the convalescents do not see or hear the maniacal patients.

(*d.*) It allows the exercising yards of the disturbed patients to be more completely separated and distant from those of the more quiet classes.

Fifth.—It increases the efficiency of discipline, among attendants and employés, by preventing their going so readily from ward to ward.

Sixth.—The main hall of each ward, having rooms upon but one side, is rendered lighter, more cheerful, and is more easily and perfectly ventilated.

Seventh.—The projection to the rear, of a portion of the sleeping rooms of each ward, cuts off the view from each other, of the wards appropriated to the men and women.

(*a.*) It lessens the expense of heating; as these wings used as sleeping apartments, do not require so high a temperature as the wards proper.

This plan combines all the advantages of the cottage and pavilion plans without their disadvantages. It promotes the ease of administration; in the visitation of officers, and the necessary transfer of patients from ward to ward, in all kinds of weather, and at all times of the day and night without exposure.

The basement of the building contains a tramway for carrying the food from the kitchens to the various dining-rooms of the wards, and a passage through which air is forced by fans for the purposes of ventilation. The radiators for heating the building will be placed in the air chamber at the base of the ventilating flues. The basement of the centre building will also contain the kitchen for resident officers. The kitchens one for each of the wings, are located a little distance to the rear of and connected with the second building of each wing by a covered passage way; in the basement there is a continuation of the tramway. The laundry, wash-house, bakery, engine-house, boiler-house, shops and fans, are arranged together in a block of buildings about three hundred feet in the rear of the centre building. The air passage is continued from the centre to this block. Houses for the porter, gardener, engineer, farmer, washer-women, and other outside employés are appropriately located with the design of separation from each other, and proximity to their various places of labor. Toward the northwest, about one thousand feet distant from the central building, will be the farm buildings, consisting of farm-house, barns, sheds, stables, &c.

ELEVATION AND SPECIFICATIONS.

The accompanying plan of the elevation has been adopted. The centre building is four stories in height. The first floor has already been described; the second story will be occupied by the superintendent and family, the third story by the other resident officers. The fourth story will contain the chapel or assembly room for patients, and also several rooms for the help employed in the centre. A special stairway for each sex leads to the chapel. The towers will afford an extended outlook. Of the wings, the first two buildings on either side will be of three stories, the third and fourth of two, and the fifth of one story.

The distinctive features of the wards have been already described.

The buildings are to be substantial and durable, without ornamentation or attempt at exterior effect, beyond what their extent and massiveness will produce. The style of architecture is the Elizabethan, which from its plainness and simplicity is especially adapted for the purpose. All the buildings will be of uncut Medina sandstone. This is a brown freestone and is favorably known as a valuable building material. The footings and foundations are to be of blue limestone. The water-table of the same stone as the wall. The exterior wall will be of rubble masonry with vertical joints and horizontal beds. All stones will be, on their face, not less than eight inches or more than two feet in length or height, and not less than eight inches in the wall. They will be laid on their natural bed and thoroughly bonded with through stones with close joints. The dressings, as sills, lintels, copings, &c., will be chisel-dressed. The linings of exterior walls are to be of brick, thoroughly built and tied to the stone by hoop-iron pieces, inserted in the joint and bent in the middle at

an angle, that moisture may condense and drip between the walls. The air spaces between the walls have openings in the attic. The basement ceilings will be plastered, one coat; the brick walls and brick ceiling over stairs, two coats; all other ceilings and side walls three coats; the last one a hard finish. The floors throughout, above the basement, will be double, the upper floors of rooms to be matched and planed pine not over four and a half inches in width. The floors of the halls to be of hard wood not over two and a half inches in width; every story above the first will have floor beams or joists, lathed and pastered, and ceiling beams placed two feet below, also lathed and plastered. This forms a closed air space for deafening, prevents the cracking of the ceilings from the vibration of the floors, and facilitates their repair without injury to plastered ceilings. All the halls and bath-rooms will be wainscoted in hard woods. The chapel walls will be wainscoted the full height, and the ceiling will have open timber framing, and be ceiled with boards between rafters. All the door-ways and windows will be trimmed with round molding of the same wood as the finish of the rooms. All the doors are to be six paneled, and those of the dormitories of pine; others of hard wood to correspond with the finish. The doors of the dormitories, dining and attendants' rooms, will be one inch shorter than the opening, and without a threshold, to allow space for the circulation of air. All the wood for interior finish, including the pine, will be selected, free from sap or large knots, and oiled. The sash will be hung with weights, and upon the wards, the cords concealed from view. The stairs will be of iron, and the balustrade filled in with wire netting. All the roofs and sides of the dormers will be slated with black Pennsylvania slate, all from the same

quarry, laid upon roofing board covered with tarred paper. The bath tubs will be of earthenware, porcelain lined, supplied through a one inch pipe, with hot and cold water, and waste through the hoppers of the water closets. The water closets on the wards will have the strongest cast-iron enameled hoppers without traps; from each will descend a five inch soil pipe without bend or branches to the main sewer pipes, on entering which it will bend to form a water trap one inch deep. Each hopper will also have an independent ventilating pipe of cast or galvanized iron. In each story of the building there will be a closet containing an inch and one-half water supply pipe with hose attachment, and one hundred and forty feet of hose ready for use in case of fire. The main of the water supply is of iron, six inches in diameter. It leaves the street main in Forest Avenue and passes directly to the centre building, to the corridor in the rear. It there divides and a rising main of three inches in diameter for each building supplies the centre, and the wards on either side. At various points branches are sent out to hydrants upon the premises. The pressure of the water from the reservoir is sufficient to force it several feet above the buildings.

The plan of forced ventilation by means of fans will be employed, the air to be driven through the main air passage or plenum, over the heating or radiating surface in the basement and carried in flues in the main walls into the wards, opening on a line above the door frames. The exit or ventilating flues to start from the rooms and wards on the upper line of the base board, opening into the attics, and carried out by ridge ventilation. Heating will be by steam.

We have attempted but a sketch of the specifications, hoping to convey to those interested in the subject of building, a general knowledge of the plan and design of

the work. Much labor has been expended upon the grounds in erecting fences, putting up temporary buildings, and arranging for future operations. A large quantity of material has been prepared and is already at hand.

The foundation of the centre building, connecting corridors, and two of the buildings of one wing have been laid, and the work is being rapidly pushed forward.

The appropriations thus far have been $300,000.

CASE OF EXCESSIVE HYPODERMIC USE OF MORPHIA. THREE HUNDRED NEEDLES REMOVED FROM THE BODY OF AN INSANE WOMAN.

REPORTED BY JUDSON B. ANDREWS, M. D.

A woman, thirty years of age, single, seamstress, with no hereditary tendency to insanity; but was of a highly nervous and excitable organization, emotional and irregular in feeling; at times buoyant and lively, and then gloomy and depressed. Her health during early life was delicate, though she suffered from no definite form of disease. At the age of 20, in April, 1862, she was seized with pain in the head. It was of short duration, but very severe, and during its continuance the patient was delirious. Attacks of the same character, both in the severity of the pain and the mental disturbance have occurred since, at intervals of from one to three months.* In 1864, she had acute rheumatism, and in 1865, a severe attack of diphtheria.

* From the subsequent history of the patient, especially while in the asylum, we are led to believe that these attacks of delirium took place at menstrual periods.

After the local disease of the throat had apparently subsided, vomiting supervened, and was repeated every few hours for some five weeks. To relieve this condition and procure sleep, hypodermic injections of mor, phia were successfully employed, for about one week and the patient rapidly regained her health. Some two years after this, or in July, 1867, she had an attack of inflammation of the bowels and peritoneum, and for four weeks was delirious most of the time. She improved somewhat in health, but for the four months succeeding, had frequent attacks of frenzy, during which she often threatened to take her own and her mother's life, and became very difficult to control. In October following, she had improved so far as to pass from the immediate charge of her physician. Soon after this, he ascertained she was using hypodermic injections of morphia, to relieve pain in her limbs and different parts of her body. I quote from his letter:

I was informed that she was using it, (morphia,) to a considerable extent, and called immediately to explain to her the effects and danger attending the practice. I believe every effort was made that could be, to prevail upon her to desist, but all to no purpose. She was cunning and artful, and would almost always study out some plan to get the morphia. She has used as much as two drams in a week, in one or two well authenticated instances. The usual amount was one dram per week. She used but little, if any, for three or four months before she was sent to the asylum, for it was very difficult for her to get it. She has acted very strangely ever since her first sickness. She has been truly a mystery, which no one could solve.

Her mother says:

That for years she has complained of pain, and pressed her hand on either side of her head, with the exclamation, "Oh mother, mother, I shall die!" That for six years she has complained of such soreness of the head that when she passed her hand over it, in smoothing her daughter's hair, she would cry out: "Oh mother, don't; it hurts me so!" That five years ago, in 1867, she was

obliged to call in help, as the patient threatened and intended to take her own life. That both before and after she began the use of morphia, her conduct was peculiar and erratic; that she was emotional, and easily disturbed by trifles. That after the morphia habit was known, her conduct for many years preceding, was wrongly attributed to this cause.

A few weeks before she was sent to the asylum, she passed into an acutely maniacal condition, in which she was sleepless, ate little and irregularly, lost flesh and strength rapidly, and became quite feeble. She was destructive of clothing, pulled her hair out, was noisy, incoherent, and violent; opposed care, wandered about, and was with difficulty controlled. In this condition, she was admitted to the institution, on the 5th of May, 1871. She was carried to the ward, and placed in bed. Examination revealed scars and ecchymosed spots, covering nearly the whole of the body which could be reached by her own hand. She asserted that she had employed the hypodermic injections for three and one-half years, once, and much of the time twice a day, making in all about two thousand injections; that during the last few months of its continuance, she had used a dram and one-half of morphia per week; that she inserted the needle perpendicularly to the surface, and often carried its full length into the tissues. For two days she was sleepless, and retained no nourishment. Chloral, in thirty grain doses was then administered, which was tolerated by the stomach, and secured sleep. The vomiting gradually became less frequent, and soon ceased. She ate well, gained flesh and strength, all maniacal symptoms subsided, and in twenty days she was up and about the ward. Menstruation, as she said, had been suppressed for two years. As she complained of pain in the back, and other symptoms which usually preceded it, she was placed on use of capsules of apiol, and on the 24th of June, began to

hall itself is broad, and from its position, cheerful and pleasant, and will serve for a recreation and general public room for the patients. A wing is projected to the rear from the centre of each ward. This has a central hall, with sleeping rooms on both sides, and is separated from the ward by a door. In the rear projection toward the connecting corridors, are located the general service rooms, as bathing, clothing, washing-rooms, closets, &c. There is also a dining-room, attendants' room, dormitory and parlor for each ward, conveniently arranged for the purposes for which they are to be used. A room is also provided for special cases, which from sickness or other causes demand extra care or accommodation. The capacity of each ward is adapted to the proportionate number which each class of patients bear to the whole number to be treated in the Institution.

There are several advantages in the plan adopted for this hospital over the rectangular, and also over the ordinary linear plan with return wings :

First.—In the more complete separation of the buildings, which insures better protection against the destruction of the institution by fire.

Second.—In affording more sun-light upon a greater portion of the building.

Third.—It facilitates a better circulation of air between and around the buildings.

Fourth.—It gives the opportunity for better classification.

(*a.*) By separating more completely the various classes, from the quiet to the most disturbed.

(*b.*) By extending the out-look from the buildings, classes do not overlook each other.

(*c.*) It promotes quietness in all the wards, and the convalescents do not see or hear the maniacal patients.

(*d.*) It allows the exercising yards of the disturbed patients to be more completely separated and distant from those of the more quiet classes.

Fifth.—It increases the efficiency of discipline, among attendants and employés, by preventing their going so readily from ward to ward.

Sixth.—The main hall of each ward, having rooms upon but one side, is rendered lighter, more cheerful, and is more easily and perfectly ventilated.

Seventh.—The projection to the rear, of a portion of the sleeping rooms of each ward, cuts off the view from each other, of the wards appropriated to the men and women.

(*a.*) It lessens the expense of heating; as these wings used as sleeping apartments, do not require so high a temperature as the wards proper.

This plan combines all the advantages of the cottage and pavilion plans without their disadvantages. It promotes the ease of administration; in the visitation of officers, and the necessary transfer of patients from ward to ward, in all kinds of weather, and at all times of the day and night without exposure.

The basement of the building contains a tramway for carrying the food from the kitchens to the various dining-rooms of the wards, and a passage through which air is forced by fans for the purposes of ventilation. The radiators for heating the building will be placed in the air chamber at the base of the ventilating flues. The basement of the centre building will also contain the kitchen for resident officers. The kitchens one for each of the wings, are located a little distance to the rear of and connected with the second building of each wing by a covered passage way; in the basement there is a continuation of the tramway. The laundry, wash-house, bakery, engine-house, boiler-house, shops and fans, are arranged together in a block of buildings about three hundred feet in the rear of the centre building. The air passage is continued from the centre to this block. Houses for the porter, gardener, engineer, farmer, washer-women, and other outside employés are appropriately located with the design of separation from each other, and proximity to their various places of labor. Toward the northwest, about one thousand feet distant from the central building, will be the farm buildings, consisting of farm-house, barns, sheds, stables, &c.

ELEVATION AND SPECIFICATIONS.

The accompanying plan of the elevation has been adopted. The centre building is four stories in height. The first floor has already been described; the second story will be occupied by the superintendent and family, the third story by the other resident officers. The fourth story will contain the chapel or assembly room for patients, and also several rooms for the help employed in the centre. A special stairway for each sex leads to the chapel. The towers will afford an extended outlook. Of the wings, the first two buildings on either side will be of three stories, the third and fourth of two, and the fifth of one story.

The distinctive features of the wards have been already described.

The buildings are to be substantial and durable, without ornamentation or attempt at exterior effect, beyond what their extent and massiveness will produce. The style of architecture is the Elizabethan, which from its plainness and simplicity is especially adapted for the purpose. All the buildings will be of uncut Medina sandstone. This is a brown freestone and is favorably known as a valuable building material. The footings and foundations are to be of blue limestone. The water-table of the same stone as the wall. The exterior wall will be of rubble masonry with vertical joints and horizontal beds. All stones will be, on their face, not less than eight inches or more than two feet in length or height, and not less than eight inches in the wall. They will be laid on their natural bed and thoroughly bonded with through stones with close joints. The dressings, as sills, lintels, copings, &c., will be chisel-dressed. The linings of exterior walls are to be of brick, thoroughly built and tied to the stone by hoop-iron pieces, inserted in the joint and bent in the middle at

an angle, that moisture may condense and drip between the walls. The air spaces between the walls have openings in the attic. The basement ceilings will be plastered, one coat; the brick walls and brick ceiling over stairs, two coats; all other ceilings and side walls three coats; the last one a hard finish. The floors throughout, above the basement, will be double, the upper floors of rooms to be matched and planed pine not over four and a half inches in width. The floors of the halls to be of hard wood not over two and a half inches in width; every story above the first will have floor beams or joists, lathed and pastered, and ceiling beams placed two feet below, also lathed and plastered. This forms a closed air space for deafening, prevents the cracking of the ceilings from the vibration of the floors, and facilitates their repair without injury to plastered ceilings. All the halls and bath-rooms will be wainscoted in hard woods. The chapel walls will be wainscoted the full height, and the ceiling will have open timber framing, and be ceiled with boards between rafters. All the door-ways and windows will be trimmed with round molding of the same wood as the finish of the rooms. All the doors are to be six paneled, and those of the dormitories of pine; others of hard wood to correspond with the finish. The doors of the dormitories, dining and attendants' rooms, will be one inch shorter than the opening, and without a threshold, to allow space for the circulation of air. All the wood for interior finish, including the pine, will be selected, free from sap or large knots, and oiled. The sash will be hung with weights, and upon the wards, the cords concealed from view. The stairs will be of iron, and the balustrade filled in with wire netting. All the roofs and sides of the dormers will be slated with black Pennsylvania slate, all from the same

quarry, laid upon roofing board covered with tarred paper. The bath tubs will be of earthenware, porcelain lined, supplied through a one inch pipe, with hot and cold water, and waste through the hoppers of the water closets. The water closets on the wards will have the strongest cast-iron enameled hoppers without traps; from each will descend a five inch soil pipe without bend or branches to the main sewer pipes, on entering which it will bend to form a water trap one inch deep. Each hopper will also have an independent ventilating pipe of cast or galvanized iron. In each story of the building there will be a closet containing an inch and one-half water supply pipe with hose attachment, and one hundred and forty feet of hose ready for use in case of fire. The main of the water supply is of iron, six inches in diameter. It leaves the street main in Forest Avenue and passes directly to the centre building, to the corridor in the rear. It there divides and a rising main of three inches in diameter for each building supplies the centre, and the wards on either side. At various points branches are sent out to hydrants upon the premises. The pressure of the water from the reservoir is sufficient to force it several feet above the buildings.

The plan of forced ventilation by means of fans will be employed, the air to be driven through the main air passage or plenum, over the heating or radiating surface in the basement and carried in flues in the main walls into the wards, opening on a line above the door frames. The exit or ventilating flues to start from the rooms and wards on the upper line of the base board, opening into the attics, and carried out by ridge ventilation. Heating will be by steam.

We have attempted but a sketch of the specifications, hoping to convey to those interested in the subject of building, a general knowledge of the plan and design of

the work. Much labor has been expended upon the grounds in erecting fences, putting up temporary buildings, and arranging for future operations. A large quantity of material has been prepared and is already at hand.

The foundation of the centre building, connecting corridors, and two of the buildings of one wing have been laid, and the work is being rapidly pushed forward.

The appropriations thus far have been $300,000.

CASE OF EXCESSIVE HYPODERMIC USE OF MORPHIA. THREE HUNDRED NEEDLES REMOVED FROM THE BODY OF AN INSANE WOMAN.

REPORTED BY JUDSON B. ANDREWS, M. D.

A woman, thirty years of age, single, seamstress, with no hereditary tendency to insanity; but was of a highly nervous and excitable organization, emotional and irregular in feeling; at times buoyant and lively, and then gloomy and depressed. Her health during early life was delicate, though she suffered from no definite form of disease. At the age of 20, in April, 1862, she was seized with pain in the head. It was of short duration, but very severe, and during its continuance the patient was delirious. Attacks of the same character, both in the severity of the pain and the mental disturbance have occurred since, at intervals of from one to three months.* In 1864, she had acute rheumatism, and in 1865, a severe attack of diphtheria.

* From the subsequent history of the patient, especially while in the asylum, we are led to believe that these attacks of delirium took place at menstrual periods.

After the local disease of the throat had apparently subsided, vomiting supervened, and was repeated every few hours for some five weeks. To relieve this condition and procure sleep, hypodermic injections of mor, phia were successfully employed, for about one week, and the patient rapidly regained her health. Some two years after this, or in July, 1867, she had an attack of inflammation of the bowels and peritoneum, and for four weeks was delirious most of the time. She improved somewhat in health, but for the four months succeeding, had frequent attacks of frenzy, during which she often threatened to take her own and her mother's life, and became very difficult to control. In October following, she had improved so far as to pass from the immediate charge of her physician. Soon after this, he ascertained she was using hypodermic injections of morphia, to relieve pain in her limbs and different parts of her body. I quote from his letter:

I was informed that she was using it, (morphia,) to a considerable extent, and called immediately to explain to her the effects and danger attending the practice. I believe every effort was made that could be, to prevail upon her to desist, but all to no purpose. She was cunning and artful, and would almost always study out some plan to get the morphia. She has used as much as two drams in a week, in one or two well authenticated instances. The usual amount was one dram per week. She used but little, if any, for three or four months before she was sent to the asylum, for it was very difficult for her to get it. She has acted very strangely ever since her first sickness. She has been truly a mystery, which no one could solve.

Her mother says:

That for years she has complained of pain, and pressed her hand on either side of her head, with the exclamation, "Oh mother, mother, I shall die!" That for six years she has complained of such soreness of the head that when she passed her hand over it, in smoothing her daughter's hair, she would cry out: "Oh mother, don't; it hurts me so!" That five years ago, in 1867, she was

obliged to call in help, as the patient threatened and intended to take her own life. That both before and after she began the use of morphia, her conduct was peculiar and erratic; that she was emotional, and easily disturbed by trifles. That after the morphia habit was known, her conduct for many years preceding, was wrongly attributed to this cause.

A few weeks before she was sent to the asylum, she passed into an acutely maniacal condition, in which she was sleepless, ate little and irregularly, lost flesh and strength rapidly, and became quite feeble. She was destructive of clothing, pulled her hair out, was noisy, incoherent, and violent; opposed care, wandered about, and was with difficulty controlled. In this condition, she was admitted to the institution, on the 5th of May, 1871. She was carried to the ward, and placed in bed. Examination revealed scars and ecchymosed spots, covering nearly the whole of the body which could be reached by her own hand. She asserted that she had employed the hypodermic injections for three and one-half years, once, and much of the time twice a day, making in all about two thousand injections; that during the last few months of its continuance, she had used a dram and one-half of morphia per week; that she inserted the needle perpendicularly to the surface, and often carried its full length into the tissues. For two days she was sleepless, and retained no nourishment. Chloral, in thirty grain doses was then administered, which was tolerated by the stomach, and secured sleep. The vomiting gradually became less frequent, and soon ceased. She ate well, gained flesh and strength, all maniacal symptoms subsided, and in twenty days she was up and about the ward. Menstruation, as she said, had been suppressed for two years. As she complained of pain in the back, and other symptoms which usually preceded it, she was placed on use of capsules of apiol, and on the 24th of June, began to

menstruate, but the flow was scanty, and accompanied by much pain.

During the month following, she steadily gained in mental strength, and became quite stout. At time of next menstrual period, the right breast swelled to an extraordinary size, so that we were obliged to suspend it with adhesive straps. It was hard, and extremely sensitive to the touch. This condition of swelling and tenderness, extended in a narrow ridge to the spine. The state of the breast was at first supposed to be owing to the sympathetic action of the organ, with the renewed activity of the menstrual function. For two weeks, applications were employed, without success, to relieve the pain and tension. At this time, on the 13th of August, the patient in rubbing her hand over the breast, discovered an elevated point, just under the skin, which on pressure, gave a pricking sensation. This was cut down upon, and a broken needle extracted. On the 15th, another needle was removed. The breast was now inflamed, and extremely sensitive. August 28, another needle was taken out. August 29, menstruation began again. The flow was profuse, and she became at once delirious. Was talkative, restless, profane and obscene, and pulled her hair out. She continued in this condition some twelve hours, and, as she stated, the next day, was entirely unconscious of what had occurred.

From this time till September 28, from one to five needles were removed daily from the breast. Menstruation then occurred again, and was characterized as before by a similar attack of mental disturbance. After this, during the months of October and November, needles were taken from various parts of the body; from the left breast, the abdominal *parietes* the *Mons Veneris*, the *labia*, and *vagina*. Of these latter, some

passed across the urethra, and rendered urination difficult and painful; others across the *vagina*, either end being imbedded in opposite sides. Some were removed from the thighs, from the leg, down to the ankle, from the buttocks, from about the *anus*, from the back as high up as between the shoulders. The largest number extracted in any one day, was twelve.

On one occasion, ether was administered, but the difficulty experienced in bringing her under its influence, and the mental disturbance produced by it were so great that it was not again resorted to. During the whole period, to her final illness, she retained her flesh, though she ate and slept irregularly, under use of tonics and sedatives. She was in a variable mental state, at times irritable, petulant, fault-finding, attempting to create ill-feeling between attendants, and demanding unnecessary care and waiting upon. At other times, she was abnormally cheerful, gay, pleasant, and fulsome of praise of all around her.

For the first two months, but comparatively little pain was felt in the extraction of the needles. The skin was thickened, harsh and dry, and almost insensible, from the prolonged and distributed use of the injections. Afterward, she suffered acutely, and often begged, with tears, that their removal might be postponed from day to day. About a month before death, she had an attack of localized pneumonia, affecting the lower portion of right lung. This was accompanied by stridulous breathing, spasm of the glottis, *globus hystericus*, crying, and other hysterical manifestations. It was followed by an attack resembling muscular rheumatism, characterized by great pain and hyperæsthesia of surface. The right arm was swelled, hot and extremely sensitive. It was supported on a pillow and kept bathed in anodyne lotions. She lost appetite and

sleep, became much depressed, and gave up all hope of recovery. Her tongue became dry and brown, pulse rapid, secretions offensive, and mind very feeble. A diarrhœa supervened and the evacuations of bowels and bladder were involuntary. She became unconscious, and finally comatose, and died on the 25th of December, 1871.

No needles were removed during the two last weeks; 286 were taken from her body during life; 11 were found in the tissues after death; 3 were passed from the *rectum* during sickness; making a total of 300 needles and pieces. Of this number, 246 were whole, and 54 were parts of needles. One was a No. 1 sewing machine needle, and several were bent. They varied in size from No. 4 to No. 12. As regards position in the body, they were distributed about as follows: in right breast, 150; left breast, 20; abdomen, 60; genitals, 20; thighs and legs, 30; back, 20. Of those removed after death, 5 were found in the right and 3 in the left breast; one in a small abscess in the epigastric, and one in the right iliac region, the point impinging upon the peritoneum, which was discolored with rust; and one in the upper part of lower lobe of left lung. The presence and position of the needles were indicated to the patient by the pricking sensation occasioned by muscular movements. They were removed in a few instances at first, by cutting down upon them. This proved to be a painful, and from the movements of the needles in the tissues, a difficult process. Hemorrhage from the small vessels, at times, gave some trouble. Afterwards, by manipulation, the ends of the needles were engaged between the thumb and forefinger, and the points, forced through the skin, were seized and the needles extracted with forceps. Sometimes much force was required to withdraw them. They

changed position quite readily, and frequently moved from one to two inches in the day. They produced little local irritation or trouble beyond the pricking sensation, and did not seem to have contributed in any notable degree toward producing the fatal result. In regard to the presence of this large number of needles in the system, no information could be obtained. The patient repeatedly and persistently denied any knowledge of having introduced them, either by the stomach or through the skin. Her mother, who visited the Asylum, could throw no light upon the subject, and was entirely ignorant of the fact until informed by us. She however, recalled the circumstance that the patient purchased, at one time, ten papers of needles, and could account for only two of them. They were not obtained or introduced while in the Asylum. She was under strict surveillance, and had no means of obtaining any number of needles, and those removed were all rusted and bore evidence of having been a long time in the body. The stomach was closely examined after death, and was in a perfectly healthy condition, with no evidence of any previous inflammatory action.

The only theory, which seems to us at all tenable, is, that they were introduced through the skin, while she was under the influence of morphia, hypodermically administered, and while suffering from hysteria. That some were found in positions where they could not have been inserted by the patient, can be accounted for by their movements in the tissues, which were observed so often during the life of the patient.

The diseased condition of the brain and its membranes was a cause sufficient to account for the abnormal mental action and conduct of her who had been "truly a mystery which no one could solve." We close this remarkable case with a transcript of the post-mortem examination.

Autopsy.—Rigor present, body well nourished; anterior surface thickly studded with small cicatrices; abdomen covered with thick layer of fat. A small abscess in abdominal wall, two inches above umbilicus, three inches by one and one-half, was filled with pus, and contained one needle. A second abscess, two inches above and to the right of the *symphysis pubis*, immediately under Pouparts ligament, contained another needle. This pressed upon the peritoneum, which though discolored by rust, was not inflamed. From the right breast, one whole and four broken needles, and from the left, one whole and two broken needles, were removed.

Head.—Arachnoid opaque and thickened over right hemisphere. The left hemisphere was covered by a thin layer of pus, contained in the sub-arachnoid space. Marked depression of convolutions at vertex of both hemispheres. The brain substance was firmer than normal. The ventricles were empty, and the choroid plexus contained numerous small cysts upon its surface, filled with serum.

Thorax.—The lower lobe of the right lung was hepatized. A whole needle was found in the upper part of the lower lobe of the left lung.

Abdomen.—The liver was soft and fatty, and the spleen enlarged; kidneys were normal. The stomach was subjected to a critical examination. It was found normal, and there was no evidence that the needles were introduced into the system through that organ.

PHYSIOLOGY.—THE FUNCTIONS OF THE BRAIN.

BY M. CLAUDE BERNARD.
Member of the French Academy of the Sciences.

[Translated from the 15th of March No. of the *Revue des Deux Mondes*, by G. C. SAWYER.]

The first care of physiology was to localize the functions of life in the different organs of the body, which serve as their instrument. Thus, digestion was attributed to the stomach, circulation to the heart, respiration to the lungs; thus, also, the seat of intelligence and of thought was placed in the brain. However, in respect to this last organ, it has been deemed necessary to make reservations, and not to admit that the metaphysical expression of the intellectual and moral faculties could be the manifestation, pure and simple of the cerebral function. Descartes, who should be ranked among the promotors of modern physiology, because he very well understood that explanations of the phenomena of life are wholly dependent upon the general physical and mechanical laws, has expressed himself clearly in this respect. Adopting the ideas of Galen upon the formation of the animal spirits in the brain, he gives them for their office, to spread themselves by means of the nerves throughout the animated machine, in order to bear to each one of the parts the impulsion necessary to its special activity. Yet, above and distinct from this physiological function of the brain, Descartes allows the soul, which gives to man the faculty of thinking: its seat, according to him, is in the pineal gland, and it directs the animal spirits which emanate from it and are subordinated to it.

The opinions of Descartes touching the functions of the brain could not to-day bear the slightest physiologi-

cal criticism; his explanations, founded upon insufficient anatomical knowledge, could only give rise to hypotheses marked with the grossest mechanism. Nevertheless they have a historical value; they show us that this great philosopher recognized in the brain two things; first, a physiological mechanism, then, above and outside of it, the thinking faculty of the soul. These ideas are very nearly those which have since prevailed among very many philosophers and certain naturalists; the brain, where the most important functions of the nervous system are completed, can not be the real organ of thought, but only the *substratum* of intelligence. This objection, in fact, is very often made, that the brain forms a physiological exception to all the other organs of the body, in that it is the seat of metaphysical manifestations, which are not within the province of the physiologist. We can conceive, they say, that digestion, locomotion, respiration, &c., may be referred to mechanical phenomena, or the phenomena of physics and chemistry: but they do not admit that thought, intelligence, and will can be brought under such explications. There is here, they say, an abyss between the organ and the function, because the question is concerning metaphysical phenomena and no longer concerning physico-chemical mechanisms.

De Blainville in his series of zoölogical lectures strongly insisted upon the definition of the organ and the *substratum*. "In the organ," said he, "there is a manifest and necessary relation between the anatomical structure and the function; in the heart, which is the organ of the circulation, the conformation and arrangement of the openings and their valves account perfectly for the circulation of the blood. In the substratum, nothing similar is observed: the brain is the

substratum of thought; it has its seat there, but thought can not be deduced from the cerebral anatomy." From such considerations it has been claimed that the reason might, in the insane, be *essentially* disturbed, that is to say without there existing any material lesion of the brain. The converse even has been maintained, and in physiological treatises cases are cited where the intellect apparently remained intact in individuals whose brain was softened or hardened. The progress of science has now done away with these doctrines; yet it must be owned that the physiologists who are warranted by the most delicate modern researches concerning the structure of the brain in localizing thought in a particular substance, or in nerve-cellules of a determinate size and order, have no more resolved the question, for all they have in reality done is to oppose materialistic to spiritual hypotheses. The only legitimate conclusion to be drawn from the foregoing is that the mechanism of thought is unknown to us, and to this conclusion all will probably assent. The principal question which we have proposed, however, none the less remains to be answered, for what it concerns us to know is, whether our ignorance upon this subject is a relative ignorance which will disappear with the progress of science, or whether it is rather an absolute ignorance, by which we mean that we are here concerned with a vital problem, which must forever remain outside the sphere of physiology. For my part, I reject this last opinion, because I do not admit that scientific truth can thus be divided into portions. How, indeed, is it to be conceived that the physiologist is empowered to explain the phenomena which are operating in all the organs of the body, except a part of those which are going on in the brain? Such distinctions can not exist in the phenomena of life. These phenom-

ena undoubtedly present very different degrees of complexity, but they are all equally entitled to be considered accessible or inaccessible to our investigations, and the brain, however marvelous may appear to us the metaphysical manifestations of which it is the seat, can not constitute an exception to the other organs of the body.

II.

The metaphysical phenomena of thought, of consciousness, of intelligence, which serve as the various manifestations of the human soul, are, considered from the physiological point of view, only ordinary phenomena of life, and can be nothing but the result of the function of the organ which expresses them. We shall proceed to show that the physiology of the brain is to be deduced, as well as that of all the other organs of the body, from physiological experimentation, and the knowledge of pathological anatomy.

The brain follows, in its physiological development, the common law; that is, it becomes more voluminous as the functions, over which it presides, increase in force. In proportion as greater intelligence is manifested, we see the brain, in the animal series, acquiring a greater development; and it is in man where the intellectual phenomena reach their highest expression, that the cerebral organ presents the most considerable volume. The intelligence of different animals can be inferred from the form of the brain, and the number of the convolutions which increase its surface: but it is not merely the exterior aspect of the brain which changes when its functions are modified, but it presents, at the same time, in its interior structure, a complexity which increases with the variety and intensity of the intellectual manifestations.

Respecting the texture of the brain, we are no longer in the time of Buffon, who regarded the brain, as he called it contemptuously, as a mucous substance of no account. The progress of general anatomy and histology has taught us that the cerebral organ possesses a texture which is at once the most delicate and the most complex of all the nervous apparatus. The anatomical elements of which it is composed are nerve-elements, under the form of tubes and cellules combined and united with each other. These elements are, in all animals, alike in their physiological properties and their histological characters; they differ in respect of number, crossings, connexions, in a word, in the *arrangement*, which presents a particular disposition in the brain of each species. The brain, in this, follows also the general law, for, in all the organs, the anatomical element maintains fixed characteristics by which it may always be recognized; organic completeness especially consists in the arrangement of these elements, which offers, in each animal species, a specific form. Each organ, is then, in reality, an apparatus whose constituent elements remain identical, but among which the grouping becomes more and more complicated, according as the function itself proves to be more varied and more complex.

If we now consider the organic and physico-chemical conditions necessary to the maintenance of life and the exercise of its functions, we shall see that they are the same in the brain as in all the other organs. The blood acts upon the anatomical elements of all the tissues, bringing them the conditions of nutrition, of temperature, of humidity, which are indispensable to them. When any organ whatsoever is less abundantly supplied with blood, its functional activity is lessened, and the organ is in repose; but, if the sanguineous fluid is

suppressed, the elementary properties of the tissues are gradually injured, while, at the same time, its functions are destroyed. It is absolutely the same with the anatomical elements of the brain. From the time that the blood ceases to be supplied to the brain, the nerve-properties are injured, as well as the cerebral functions, which finally disappear, if the anæmia becomes complete. A simple modification in the temperature of the blood, in its pressure, is sufficient to produce profound disturbances in the sensibility, the movements, or the will.

All the bodily organs present to us alternately a state of repose and a state of functional activity in which the circulatory phenomena are essentially different. This has been shown beyond a doubt by numerous observations made upon the most diverse organs. If, for instance, we examine the alimentary canal of an animal when fasting, we find the mucous membrane which covers the inner surface of the stomach and the intestines of a pale color, and slightly vascular; during digestion, on the other hand, it has been ascertained that the same membrane is highly colored and distended by the blood which flows thither with great force. These two circulatory phases, in the state of repose and in the state of functional activity, have been directly verified in the stomach in the case of the living man.

All physiologists are acquainted with the history of the young Canadian accidentally wounded by a musket which was discharged, with the muzzle almost touching his left side. The abdominal cavity was laid open with an enormous wound, and the food taken at the last meal escaped from a large hole in the stomach. The patient was cared for by Dr. Beaumont, Surgeon in the United States army; he recovered, but a fistulous sore remained, from fourteen to sixteen inches in circumference, by means of which different substances could be introduced

into the stomach, and its operations readily observed. Dr. Beaumont, wishing to study this remarkable case, took the young man into his service: his health, and especially his digestive powers, having been fully restored. He kept him in his employment for seven years, and, during this period, made many observations of the highest physiological interest. When the interior of the stomach was observed in a state of fast, the inner membrane could be distinctly perceived. It formed irregular folds, its surface of a pale rose-color was unmoved, and was lubricated only by mucus. As soon as the food descended into the stomach and touched the mucous membrane, the circulation was quickened, the color became brighter, and peristaltic movements manifested themselves. The mucous papillæ then poured out the gastric juice, the clear and transparent fluid whose office it is to dissolve the alimentary substances. When the mucus, with which the membrane was covered, was wiped off with a sponge or a piece of fine linen, the gastric juice was immediately seen to reappear and collect in little drops, which streamed along the walls of the stomach, as drops of sweat upon the face. What we have just seen take place upon the surface of the mucous membrane, is observed also in the intestines, and all the glandular organs attached to the digestive apparatus. The salivary glands, and the pancreas, present, during the intervals of digestion, a pale and exsanguious tissue in which the secretions are wholly suspended. During the digestive period, on the contrary, these same glands are gorged with blood, rutilant, almost erectile, and from their ducts flow in abundance liquid secretions.

We must needs then recognise in the organs two kinds of circulations; on the one hand, the *general circulation*, known since Harvey, and on the other, the

local circulations, which have only recently been discovered and studied. In the phenomena of general circulation, the blood only in some measure traverses the parts in its passage from the arteries into the veins; in the phenomena of the local circulation, which is the true functional circulation, the sanguineous fluid penetrates into all the recesses of the organ, and accumulates round the anatomical elements to arouse and excite their mode of special activity. The sensitive and vasomotor nervous system presides over all the phenomena of the local circulations which accompany the organic functions: thus the saliva flows abundantly when a sapid substance affects the nerves of the buccal mucous membrane: thus, too, gastric juice is formed on occasion of the contact of the food with the sensitive surface of the stomach.

This mechanical excitation of the peripheric sensitive nerves, affecting the organ by reflex action, may, however, be replaced by a purely psychical or cerebral excitation. This is demonstrated by a simple experiment. Taking a horse when fasting, we percieve on the side of the jaw the excretory canal of the parotid gland, and on dividing this duct, nothing issues from it; the gland is at rest. If, now, we offer the horse oats, or, better still, if without showing him anything, we go through with a movement which indicates to the animal that we are going to feed him, straightway a continuous stream of saliva flows from the parotid duct, and at the same time the tissue of the gland is injected and becomes the seat of a more active circulation. Dr. Beaumont observed analagous phenomena in the case of his Canadian. The idea of a savory viand determined not only a flow of the secretions in the salivary glands, but also induced a flow of blood to the mucous membrane of the stomach.

What we have just said respecting the local or functional circulations applies not only to the secretory organs where the separation of a liquid takes place in the formation of which the blood more or less coöperates; we have here a general phenomenon, which is observed in all the organs, whatever may be the nature of their functions. It is the same with the muscular system, whose work is of a purely mechanical nature, as with the glands, which act chemically. At the moment when a muscle enters into the exercise of its function, the blood circulates with greater activity, and this again is moderated when the organ enters into repose. The nervous system in its whole periphery, the spinal marrow and the brain, which are employed for the manifestation of the phenomena of innervation and intelligence are also, as we shall see, subjected to this law.

The relations which exist between the circulatory phenomena of the brain and the functional activity of this organ, were long obscured by erroneous opinions upon the conditions of sleep, which is correctly regarded as the state of repose of the cerebral organ. The Ancients believed that sleep was the result of the pressure of the blood upon the brain, when its circulation slackened. They supposed that this pressure was exerted especially at the back of the head, or the point where the venous sinuses of the dura mater end in a common confluent, which is still called the *Torcular* or *Herophilus' Press*, from the name of the anatomist who first described it. These hypothetical explanations have been transmitted even to our times: it is only within a few years that experiments have shown their falsity.

It has been proved by direct experiment that the brain, during sleep, in place of being congested, is, on the contrary, pale and exsanguious; while, in the waking state, the circulation, having become more ac-

tive, induces an afflux of blood, which is in proportion to the intensity of the cerebral functions. In this respect, natural sleep and the anæsthetic sleep produced by chloroform resemble each other; in both cases, the brain, being in a state of repose or inaction, presents the same pallid appearance, and relative anæmia. The experiment is as follows: a portion of the bony wall of the cranium of an animal is carefully removed, and the brain is thus laid bare, so that the circulation at the surface of this organ can be observed. The animal is then made to inhale chloroform in order to produce anæsthesia. At first, in consequence of the stimulating effect of the chloroform, the brain is seen to become congested, and hernia takes place on the outside; but, as soon as anæsthetic sleep comes on, the cerebral substance subsides, becomes pale, while the capillary circulation diminishes so long as the state of sleep or of cerebral repose continues.

In order to observe the brain during the period of natural sleep, dogs have been subjected to the process of trepanning: the piece of bone that is taken out from the cranium is then replaced by a watch-crystal exactly fitted, to prevent the irritating action of the air upon the wound. Animals bear this operation perfectly well. Looking in by this sort of window upon the brain during the waking state, and also during sleep, we ascertain that when the dog is asleep, the brain is always paler, and that a fresh flow of blood regularly manifests itself on awakening, when the cerebral functions resume their activity. Facts, analagous to these observed in animals, have been directly seen in the human brain. A person, who was the victim of a terrible railway accident, suffered the loss of a considerable portion of the skull. The brain was laid open for an extent of more than three inches in length by six inches in width. The

injured man suffered from frequent and severe attacks of epilepsy and coma, during which the brain invariably swelled. After these attacks, sleep came on, and the cerebral hernia gradually decreased. When the patient was awakened, the brain mounted up anew, and rose to a level with the outer bony table. In the case of another person, whose skull was fractured, the cerebral circulation was observed while anæsthetics were administered. When the inhalation began, the cerebral surface became arborescent and injected; the hemorrhage and cerebral movements increased, the surface of the brain gradually sank below the aperture, while, at the same time, it became relatively pale and anæmic.

On the whole the brain is subject to the common law which regulates the circulation of the blood in all the organs. By virtue of this law, when the organs are asleep, and their functions are suspended, the circulation becomes less active; it increases, on the contrary, as soon as the functional activity manifests itself. The brain, I repeat, makes no exception to this general law, as has been incorrectly believed, for it is now proved that the state of sleep is coincident not with the congestion, but, on the contrary, with anæmia of the brain.

If, now, we would comprehend the relation which exists between the increased circulation of the blood and the functional state of the organs, we shall readily perceive that this increased flow of the sanguineous fluid is connected with a greater intensity in the chemical metamorphoses which are going on in the tissues, as well as with an increase in the caloric phenomena, which are its necessary and immediate consequence. The production of heat in living bodies has been from the most ancient times an established fact: but the Ancients had false ideas upon the subject of heat: they attributed it to an

innate organic power having its seat in the heart, which was thus the fire-place, where the blood and the passions boil. More lately, the lungs were considered as a sort of hot air-stove, whither the blood came in successive masses to derive the heat which the circulation was commissioned to distribute to the whole body. The progress of modern physiology has proved that all these absolute localizations of the condition of life are chimeras. The sources of animal heat are in all the parts, and in no one part exclusively. It is only by the functional harmony which exists among the different organs that the temperature is maintained at a fixed point, or nearly so, in man and the warm-blooded animals. There are, in truth, as many calorific fire-places as there are particular organs and tissues, and we ought to connect everywhere the production of heat with the functional work of the organs. When a muscle contracts, when a mucous surface or a gland secretes, there is invariably a production of heat at the same time that there is produced an increase of activity in the local circulatory phenomena.

Is it the same with the nervous system and the brain? Modern experiments have proved this beyond a doubt. Every time that the spinal marrow and the nerves manifest sensibility or movement, every time that any intellectual work goes on in the brain, a corresponding quantity of heat is produced there. We should therefore consider heat in the animal economy as a resultant of the organic work of all the parts of the body; but it, at the same time, becomes also the principle cause of the activity of each one of these parts. This correlation is especially indispensable in the case of the brain and the nervous system, upon which all other vital action is dependent. Experiments have shown that the temperature of the tissue of the

brain is higher than that of any other bodily organ. In man and the warm-blooded animals, the brain itself generates the heat which is necessary for the manifestation of its properties as a tissue. If this were not the case, it would inevitably be cooled, and the cerebral functions would immediately be enfeebled, and intelligence and will disappear. This occurs in the cold-blooded animals, in whom the calorifying function is not strong enough to enable the organism to resist the external causes which operate to cool it.

III.

With regard to the organic or physico-chemical conditions of its functions, the brain, then, presents us nothing exceptional. If, now, we pass to physiological experimentation, we shall see that it succeeds in analyzing the cerebral phenomena in the same way as those of all the other organs. The experimental process, which is most generally practiced for the purpose of determining the functions of the organs consists in removing or destroying them slowly or suddenly so that we can judge as to the use of the organ by the special disturbances thereby occasioned in the vital phenomena. This process of organic destruction or ablation, which is, in fact, a brutal method of vivisection has been applied upon a grand scale to the study of the whole nervous system. Thus, when a nerve is cut and the parts to which it is distributed lose their sensibility, we conclude that we have here a sensory-nerve; if the power of movement is lost, we infer that we have to do with a motor-nerve. The same method has been employed for ascertaining the functions of the different parts of the encephalic organ, and although we are here met with new practical difficulties by reason of the complexity of the parts, this method has furnished gen-

eral results which are incontestable. It was already known to all that intelligence is not possible without brain, but experimentation has pointed out precisely the rôle which each portion of the encephalon has to perform. We learn that it is in the cerebral lobes that consciousness or intelligence properly so-called resides, while the lower portions of the encephalon contain nerve-centres appropriated to organic functions of an inferior order. This is not the place to describe the particular rôle of these different kinds of nerve-centres, which are superposed and gradually ranged far even into the spinal marrow; it is sufficient to prove that we owe our knowledge upon this point to the method of vivisection by organic ablation which is applied, in general, in all physiological investigations. Here, too, the brain comports itself as all the other organs of the body, in this regard that each lesion of its substance introduces into its functions characteristic disturbances, which always correspond to the injury.

The physiologist is not restricted to causing by means of cerebral lesions, local paralyses, the result of which is to suppress the action of the will upon certain organs. He can also, by merely disturbing the equilibrium of the cerebral functions, suppress freedom in the voluntary movements. Thus the experimenter by injuring the peduncles of the cerebellum, and different points of the encephalon, can make an animal walk as he chooses, to the right, or the left, forwards or backwards, now by a directing movement, now by a movement of rotation upon the axis of the body. The animal's will persists, but it is no longer able to direct its own movements. In spite of the efforts of its will, it goes *fatally* in the direction that the organic lesion has determined. Pathologists have noted numerous facts of an analagous character in reference to man. Lesions

of the peduncles of the cerebellum induce in man as well as in animals, rotary movements. Some, again, can only walk straight forward. By a cruel irony, a brave old general can only go backward. The will, which proceeds from the brain, does not then exert its force upon our locomotive organs themselves; it is exerted upon the secondary nerve-centres, which must be held poised in a perfect physiological equilibrium.

There is another more delicate experimental method, which consists in introducing into the blood different toxic substances designed to act upon the anatomical elements of the organs, which are left in their place and in their integrity. By means of this method, we can destroy separately the properties of certain nervous and cerebral elements just as we isolate also the other organic elements, whether muscular or sanguineous. Anæsthetics, for example, destroy consciousness and weaken the sensibility, while leaving intact the motor-principle. *Curare*, on the contrary, destroys the motor-power, but leaves intact the sensibility and the will; the poisons that affect the heart destroy the contractile power of the muscles, while the oxide of carbon destroys the oxygenous property of the sanguineous globule without in any wise modifying the properties of the nerve-elements. It will thus be seen that by this method of investigation or elementary analysis of the organic properties, the brain and the phenomena of which it is the seat may in fact be reached in the same way as all the other functional apparatus of the body.

There is, finally, a third method of experimentation, which may be termed that of experiment by redintegration. This method unites, in a measure, physiological analysis and synthesis; it permits us to establish by proof and counter-proof the relations which bind the function to its organ in the cerebral manifestations.

When the brain is removed from one of the lower animals, the function of the organ is necessarily suppressed; but the persistence of life in these beings permits the brain to be re-formed, and as the organ is re-generated, its functions reappear. This method of experiment may be tried successfully, even with the superior animals, as birds, where the intelligence is much more highly developed. In a pigeon, for example, the cerebral lobes having been removed, it immediately loses the use of its senses and the power of seeking food. If, however, the animal is supplied with nourishment by injection, it is able to survive, because the nutritive functions have remained intact, in so far as their special nerve-centres have been respected. The brain, with its special anatomical elements is gradually re-generated, and, in proportion as this re-generation is operated, we see the use of the senses, the instincts and the intelligence of the animal return. Here, I allow myself to repeat, the process of experiment has been complete; there has been, in a measure, both analysis and synthesis of the vital function, since the successive destruction of the different parts of the brain has suppressed, in succession, its different functional manifestations, and the re-production, in succession, of these same parts, has made these same manifestations reappear. It is needless to add that the same thing holds good for all the other parts of the body susceptible of redintegration.

Diseases, which are in reality only vital disturbances caused naturally instead of being occasioned by the physiologist, affect the brain in accordance with the ordinary laws of pathology, that is to say, by giving rise to functional disturbances which are always in relation to the seat and the nature of the lesion. In a word, the brain has its pathological anatomy as well as all the organs of the economy, and cerebral pathology has its

special symptomatology, as have also the other organs. In mental alienation we see most extraordinary disturbances of the reason, and the study of these is a fruitful mine for the physiologist and the philosopher to draw from; but the different forms of insanity or of delirium are only derangements of the normal function of the brain, and these alterations of functions are, in the cerebral as in the other organs, connected closely with certain anatomical alterations. If, in many cases, they are not yet known, the fault lies only in the imperfection of our means of investigation. Moreover, do we not see that certain poisons, such as opium, *curare*, paralyze the nerves and the brain, without our being able to discover in the nevous substance any visible alteration? Yet we are certain that these alterations exist, for to admit the contrary would be to admit an effect without a cause. When the poison has ceased to act, we see the intellectual disturbances disappear, and the normal state return. It is the same when the pathological lesions are cured, the disorders of the intelligence cease, and reason returns. Pathology, then, furnishes us here, too, with a sort of functional analysis and synthesis, just as is found in the experiments of redintegration. Disease, in fact, suppresses more or less completely the function, by altering, more or less completely the texture of the organ, and cure restores the function by re-establishing the normal organic state.

If the functional manifestations of the brain were the first to attract the attention of philosophers, they will certainly be the last which the physiologist will explain. We are of opinion that the progress of modern science now permits of entering upon the physiology of the brain; but before entering upon the study of the cerebral functions, it is necessary to have a definite understanding as to the point of departure. We have

aimed in this article to state only one term of the problem, and to show that it is necessary to renounce the opinion that the brain forms an exception in the organism, that it is the *substratum* and not the organ of the intelligence. This idea is not only an antiquated, but an anti-scientific notion, injurious to the progress of physiology and psychology. How conceive, indeed, that any apparatus whatever in the domain of brute or animate nature can be the seat of a phenomenon without being its instrument? Persons are evidently influenced by pre-conceived ideas in considering the question of the functions of the brain, and the solution of the question is combatted by arguments concerning the tendency of certain views. Some will not admit that the brain is the organ of the intelligence, just as the heart is the organ of the circulation, because they fear to be involved in materialistic doctrines, while others, on the contrary, hasten to place the intelligence in a round or fusiform nerve-cellule, so as not to be taxed with spiritualism. As for us, we will not allow ourselves to be prejudiced by these fears. Physiology shows us, that, save the difference and the greater complexity of the phenomena, the brain has the same claim to be the organ of the intelligence, as the heart to be the organ of the circulation, or the larynx to be the organ of the voice. We discover everywhere a necessary connection between organs and their functions; here is a general principle, from which no organ of the body can be exempted. Physiology should, then, after the example of the most advanced sciences, disengage itself from philosophical trammels which would impede its march; its mission is calmly and confidently to seek the truth, its end, to establish the truth imperishably, without ever having to fear the form under which it may appear unto her.

THEORIES OF EVOLUTION—No. III.

PROF. HUXLEY'S REPLY TO MR. DARWIN'S CRITICS.

More Criticisms on Darwin: and Administrative Nihilism, by T. H. HUXLEY, LL. D., F. R. S., author of "Lay Sermons," "Man's Place in Nature," &c. New York: D. Appleton & Co.

1. *Contributions to the Theory of Natural Selection, by* A. R. WALLACE: 1870.

2. *The Genesis of Species, by* ST. GEORGE MIVART, F. R. S. (Second Edition:) 1871.

3. *Darwin's Descent of Man, Quarterly Review*, July, 1871.

In some former articles in this JOURNAL, we sought to bring together in as condensed a form as our limited space required, the various arguments and considerations that seemed to us to constitute a valid array of objection to Mr. Darwin's Theory of Evolution by Natural and Sexual Selection, especially as relied upon to determine the question of the origin of man. Those arguments are derived from the three departments of science commonly understood as zoölogical, psychological, and ethical: though all these would now be comprehended by the Materialists under the single head of "Biology." Although each of the points treated of in the preceding articles, or referred to as treated by others, might be expanded into a volume, and the full force of the argument, especially in the psychological and ethical divisions of the subject may, through a compulsory brevity, have been inadequately represented, we do not propose to supplement it here, by any formal statement or discussion. Our present object

is simply to remark upon the recent paper of Prof. Huxley in the *Contemporary Review*, the title of which is given in the republication named at the head of this article: and to express our gratification at finding how little even the ablest writer among the advocates of Mr. Darwin's theory has to show by way of real answer to the arguments of Messrs. Wallace and Mivart.

As in the case of the British Geologists against Sir Wm. Thompson, (*Lay Sermons, p.* 229,) Prof. Huxley appears to have constituted himself the "Attorney-General" for the Darwinian Evolutionists: and it may well be doubted, whether, in point of literary finish as well as scientific acuteness, any more competent person could have been selected for the special task which he has assigned himself. But the style of a partisan advocate is readily distinguishable from that of a judicial investigation of truth: and it seems something incongruous with the patient calmness of scientific discussion that we should be so often encountering arguments *ad invidiam*, and such subtle mixture of the covert sneer and irreverence as the following:

> Mr. Wallace thinks it necessary to call in an intelligent Agent—a sort of supernatural Sir John Sebright (!)—to produce even the animal frame of man: while Mr. Mivart requires no Divine assistance till he comes to man's soul." (p. 7.)

This may be deemed clever: but it is the cleverness of a jury lawyer, not of the scientific lecture-room. It is a scoff which reminds one of Cicero's remark upon Velleius, that "he had made up his mind to be an Epicurean before he had learned the doctrine." It is proved indeed that a man may be eminent in science without necessarily being a Christian: but the levity which shocks the general Christian sentiment by a flippant comparison of the Creator to a mere pigeon-fancier or horse-breeder, is at least in very questionable taste.

Writers like Prof. Huxley may be as anxious as Lucretius to strike all intelligence out of the operations of nature, but they have not reached yet that point of moral hardihood to glory in, and not repudiate rather, the name of atheist.

Prof. Huxley sets out with the statement that Mr. Darwin's "Origin of Species" has, "in a dozen years, worked as complete a revolution in biological science as the *Principia* did in Astronomy," and applies to it an expression of Helmholtz, "an essentially new creative thought." He speaks of a "mixture of ignorance and insolence," and "abusive nonsense," with which Mr. Darwin was at first assailed, and contrasts the style of the article in the *Quarterly Review* for July, 1871, with that of another in the same *Review* which preceded it by just eleven years. We have read both those articles, and we are free to say that we can discover nothing in either of them to justify the application of such strong epithets. We found no "mixture of ignorance and insolence" and no "abusive nonsense:" and as for contrast, there is none but such as should arise from the legitimate advance in the state of science, and the increase in the number of ascertained facts in ten years' time. In point of fact the article of 1860 is the more complimentary to Mr. Darwin of the two, giving him the highest credit for his real contributions to natural history, as well as for genius and originality in the exposition of his new theory. And the arguments of that article against that theory, as an adequate account of the origin of species, are for the most part as valid as ever, and have not yet been refuted. Indeed, we can not discover so much "contrast" between the earlier and later papers referred to, as there is between the first and last editions of Mr. Darwin's own work. And Mr. Darwin himself has had the candor

is simply to remark upon the recent paper of Prof. Huxley in the *Contemporary Review*, the title of which is given in the republication named at the head of this article: and to express our gratification at finding how little even the ablest writer among the advocates of Mr. Darwin's theory has to show by way of real answer to the arguments of Messrs. Wallace and Mivart.

As in the case of the British Geologists against Sir Wm. Thompson, (*Lay Sermons, p.* 229,) Prof. Huxley appears to have constituted himself the "Attorney-General" for the Darwinian Evolutionists: and it may well be doubted, whether, in point of literary finish as well as scientific acuteness, any more competent person could have been selected for the special task which he has assigned himself. But the style of a partisan advocate is readily distinguishable from that of a judicial investigation of truth: and it seems something incongruous with the patient calmness of scientific discussion that we should be so often encountering arguments *ad invidiam*, and such subtle mixture of the covert sneer and irreverence as the following:

> Mr. Wallace thinks it necessary to call in an intelligent Agent—a sort of supernatural Sir John Sebright (!)—to produce even the animal frame of man: while Mr. Mivart requires no Divine assistance till he comes to man's soul." (p. 7.)

This may be deemed clever: but it is the cleverness of a jury lawyer, not of the scientific lecture-room. It is a scoff which reminds one of Cicero's remark upon Velleius, that "he had made up his mind to be an Epicurean before he had learned the doctrine." It is proved indeed that a man may be eminent in science without necessarily being a Christian: but the levity which shocks the general Christian sentiment by a flippant comparison of the Creator to a mere pigeon-fancier or horse-breeder, is at least in very questionable taste.

Writers like Prof. Huxley may be as anxious as Lucretius to strike all intelligence out of the operations of nature, but they have not reached yet that point of moral hardihood to glory in, and not repudiate rather, the name of atheist.

Prof. Huxley sets out with the statement that Mr. Darwin's "Origin of Species" has, "in a dozen years, worked as complete a revolution in biological science as the *Principia* did in Astronomy," and applies to it an expression of Helmholtz, "an essentially new creative thought." He speaks of a "mixture of ignorance and insolence," and "abusive nonsense," with which Mr. Darwin was at first assailed, and contrasts the style of the article in the *Quarterly Review* for July, 1871, with that of another in the same *Review* which preceded it by just eleven years. We have read both those articles, and we are free to say that we can discover nothing in either of them to justify the application of such strong epithets. We found no "mixture of ignorance and insolence" and no "abusive nonsense:" and as for contrast, there is none but such as should arise from the legitimate advance in the state of science, and the increase in the number of ascertained facts in ten years' time. In point of fact the article of 1860 is the more complimentary to Mr. Darwin of the two, giving him the highest credit for his real contributions to natural history, as well as for genius and originality in the exposition of his new theory. And the arguments of that article against that theory, as an adequate account of the origin of species, are for the most part as valid as ever, and have not yet been refuted. Indeed, we can not discover so much "contrast" between the earlier and later papers referred to, as there is between the first and last editions of Mr. Darwin's own work. And Mr. Darwin himself has had the candor

to admit that the reasoning of his various critics has compelled him in many instances to modify his own conclusions, though, as we think we have elsewhere sufficiently shown, very little for the better. If the later "criticisms on Darwin," as Prof. Huxley says, show more "attention to those philosophical questions which underlie all physical science," Mr. Darwin himself, in his later editions, is less explicit in his demands upon our faith in that mythological feat by which a "swimming bear" was supposed capable of being "developed into something as monstrous as a whale."

As to Mr. Darwin's theory being "a new creative thought" (though its main element would rather seem to be antagonistic to all ideas of *creation* whatever) we have no wish to detract from the credit of original discovery or invention which may be due either to him or to Mr. Wallace. But if the originality consist in the maintenance of evolution by the specific theory of *natural selection*, we can not but agree with a writer in the *Edinburgh* for 1860, that it is only "the *homeopathic* form" of the transmutation hypotheses previously put forth by Lamarck, Demaillet and others. Lamarck believed in the transmutation of species by the operation of some "*impulse from within*," as modified by the influence of external circumstances upon the organization. All along through Mr. Darwin's works, for the explanation of many crucial phenomena not otherwise to be accounted for, we are referred to some *unknown cause*, residing in the *nature and constitution of the organism;* while natural selection presents the operation of those "external circumstances," in the "struggle for existence," which determine the "survival of the fittest."

Now, Mr. Mivart, as well as Mr. Darwin and Mr. Wallace, is an "Evolutionist." His only quarrel with

Mr. Darwin's theory is upon its claim to be an adequate and comprehensive account of evolution. He is not willing to regard all the operations of the universe as purely unmoral and unintelligent. Instead of talking about "unknown" causes or forces, and stopping there, he is for establishing a theory of evolution which shall be consistent with the natural and intuitive ideas of *Theism;* and he believes the facts of Nature point clearly in this direction: a belief in which we may safely agree with him, unless we are to distrust that logical apprehension of the relation of cause and effect which everywhere characterizes human nature and human intellect among the beings of this world. He puts forth a theory of evolution, which he calls "Derivative Creation," and which is "simply the Divine action by and through natural laws," as distinguished from the original "primary or absolute creation" of the elements of the world. Of this theory he says:

> This view of evolution harmonizes well with theistic conceptions; not of course, that this harmony is brought forward as an argument in its favor generally, but it will have weight with those who are convinced that theism reposes upon solid grounds of reason as *the* rational view of the universe. To such, it may be observed that, thus conceived, the Divine action has that slight amount of resemblance to and that wide amount of divergence from, what human action would be, which might be expected *a priori*—might be expected, that is, from a being whose nature and aims are utterly beyond our power to imagine, however faintly, but whose truth and goodness are the fountain and source of our own conceptions of such qualities. (*Genesis of Species, p.* 254.)

He believes in an "eternal law" presiding over the actions of the entire organic world, and that this "conception of an internal innate force will ever remain necessary however much its subordinate processes and actions may become explicable;" moreover, that this internal force "is determined to action by the stimulus

of external conditions:" but that "these external influences equally with the internal ones are the results of one harmonious action underlying the whole of Nature, organic and inorganic, cosmical, physical, chemical, terrestrial, vital and social."

If any one should ask, how this differs from Mr. Darwin's view, Prof. Owen, in his work on the "Anatomy of Vertebrates," might supply the answer:

"Derivation" sees among the effects of the innate tendency to change irrespective of altered circumstances, a manifestation of creative power in the variety and beauty of the results; and, in the ultimate forth-coming of a being susceptible of appreciating such beauty, evidence of the pre-ordaining of such relation of power to the appreciation. "Natural selection" acknowledges that if ornament or beauty, in itself, should be a purpose in creation, it would be absolutely fatal to it as an hypothesis. "Natural Selection" sees grandeur in the view of life, with its several powers, having been orginally breathed by the Creator into a few forms or into one. "Derivation" sees therein a narrow invocation of a special miracle and an unworthy limitation of creative power, the grandeur of which is manifested daily, hourly, in calling into life many forms, by conversion of physical and chemical into vital modes of force, under as many diversified conditions of the requisite elements to be so combined. (*Cited, Genesis of Species, p.* 255.)

Every one knows who has read the *Origin of Species*, that the "dogma of separate creations" is a sort of *bête noir* of Mr. Darwin's: and in one place he admits that the desire to overthrow that dogma had led him too far. (*Descent of Man, Vol. I., p.* 146.) Certain it is that Mr. Darwin treats the opponents of his exclusive theory of evolution by natural selection as advocates of the dogma of absolute separate creations. He says:

These authors seem no more startled at a miraculous act of creation than at an ordinary birth. But do they really believe that at innumerable periods in the earth's history certain elemental atoms have been commanded suddenly to flash into living tissues? Do they believe that at each supposed act of creation one individual or many were produced? etc. (*Origin, p.* 431.)

But derivative creation, in virtue of some innate law, or inherent tendency, does not imply any such thing as this. Even Dr. Asa Gray, in his remarks on Darwin in the *Atlantic Monthly*, twelve years ago, pointed out this fact, when he said:

> Agreeing that plants and animals were produced by omnipotent fiat, does not exclude the idea of natural order and what we call *secondary causes*. The record of the fiat, "Let the earth bring forth grass, the herb yielding seed,"—"let the earth bring forth the living creature after his kind"—seems even to imply them.

Of course, we are at liberty to suspend our judgment as to the question whether any general system of evolution at all has been sufficiently made out from the facts and phenomena thus far observed. But there can be no mistaking the fact that evolution by derivative creations is a very different thing from evolution by natural selection: that the former is consistent with theism, while the latter is not. Mr. Darwin himself, we apprehend, recognizes this state of the case. In his work on "Animals and Plants under Domestication," he enters into a long metaphysical argument to prove that if an omniscient creator could have intentionally ordered the shape of fragments of rock for the builder, or the variations in animals for the breeder, then "the plasticity of organization, which leads to many *injurious* deviations of structure, as well as that *redundant* power of reproduction which inevitably leads to a struggle for existence, and as a consequence to the natural selection and survival of the fittest, *must appear to us superfluous laws of nature*." He says also:

> If we give up the principle in one case—if we do not admit that the variations of the primeval dog were intentionally guided in order that the greyhound, for instance, that perfect image of symmetry and vigor, might be formed—no shadow of reason can be assigned for the belief that the variations, alike in nature, and the result of the same general laws, which have been the ground work

through natural selection of the formation of the most perfectly adapted animals in the world, man included, were intentionally and specially guided. However much we may wish it, we can hardly follow Prof. Asa Gray in his belief that "variation has been led along certain beneficial lines like a stream along definite and useful lines of irrigation." (*Cited in Genesis of Species, p.* 272.)

This is certainly conclusive as to Mr. Darwin's views of theism and teleology both. It is impossible metaphysically to separate the theory of evolution by natural selection from the old atheistic Lucretian doctrine of *chance*, which Cicero, even while he listened to it, and as his works show, thoroughly understood it, yet regarded with inexpressible abhorrence. Prof. Huxley himself, who regards teleology as unscientific, undoubtedly gives the correct construction of Darwinism in regard to this subject. He says:

> If we apprehend the spirit of the "Origin of Species" rightly, nothing can be more entirely and absolutely opposed to Teleology, as it is commonly understood, than the Darwinian theory. According to teleology, each organism is like a rifle bullet fired straight at a mark; according to Darwin, organisms are like grape shot of which one hits something and the rest fall wide. For the teleologist an organism exists because it was made for the conditions in which it is found: for the Darwinian an organism exists because, out of the many of its kind, it is the only one which has been able to persist in the conditions in which it is found. Far from imagining that cats exist *in order* to catch mice well, Darwinism supposes that cats exist *because* they catch mice well—mousing being not the end, but the condition of their existence," &c. (*Lay "Sermons," p.* 303.)

We do not propose here to follow Mr. Mivart in his masterly answer to Mr. Darwin's objections against the truth of any such supposition as that of the special guidance by an omniscient Creator in the various phenomena of organic beings; but we agree with him that the belief in such intelligent agency—in a God and Creator, does not repose upon physical phenomena, but

upon the "primary intuitions" of man. And as to "laws of nature appearing superfluous" under such a belief, a good naturalist, who is familiar with so many yet unexplained phenomena in the world, ought to be the last man to deny that such "appearance" may be only the effect of human ignorance. As to Mr. Darwin's question whether it can be supposed that an omniscient creator ordained sundry details, such as "variation" for certain limited purposes as they appear to us, Mr. Mivart makes the following profound reply:

> The theist, though properly attributing to God what, for want of a better term, he calls "purpose" and "design," yet affirms that the limitations of human purposes and motives are by no means applicable to the Divine purposes. Out of many, say a thousand million reasons for the institution of the laws of the physical universe, some few are to a certain extent conceivable by us; and among these, the benefits, material and moral, accruing from them to men, and to each individual man in every circumstance of his life, play a certain, perhaps a very subordinate part. As Baden Powell observes, "How can we undertake to affirm, amid all the possibilities of things of which we confessedly know so little, that a thousand ends and purposes may not be answered, because we can trace none, or even imagine none, which seem to our short-sighted faculties to be answered in these particular arrangements?" (*Genesis of Species, p.* 276.)

It has already been seen that Mr. Wallace, as well as Mr. Mivart, has parted company with Mr. Darwin, in that he too believes in a system of evolution which is under the operation and guidance of a ruling Intelligence.

This is the head and front of their offending in the eyes of Prof. Huxley, and the occasion of the sarcastic passage we have already quoted.

Mr. Mivart believes that this theory of derivative creations covers and harmonizes all the facts that have heretofore been relied upon to sustain severally the teleological, typical and transmutationist conceptions of

the organic world, and he is naturally solicitous to prove, therefore, that there is nothing in the doctrine of evolution *per se*, to conflict with religion. This it is, which more than anything else, appears to arouse the ire of Prof. Huxley in the paper now under our notice. We declare that the tone and manner of Prof. Huxley in this paper, remind us irresistibly of a passage in Mr. Mivart's chapter on "Theology and Evolution," which, though it gives no evidence of any intended personal application, seems too well to fit some of these strong-worded defenders of Darwinianism:

> Some individuals within this latter class, (*i. e.* of those who are "hostile to religion,") may not believe in the existence of God, but may yet abstain from publicly avowing this absence of belief, contenting themselves with denials of "creation" and "design," though these denials are really consequences of their attitude of mind respecting the most important and fundamental of all beliefs. (*Genesis of Species*, p. 260.)

If Prof. Huxley could have supposed that this passage was levelled directly at himself, he could hardly have been thereby provoked to show greater unfairness and discourtesy than he has in this reply to Mr. Darwin's critics. His direct appeal is to the *odium theologicum*. Referring to the assertion of Mr. Mivart that there is no necessary opposition between evolution and religion, he begins with the *brusque* demand:

> But then what do they mean by this last much abused term? On this point the Quarterly Reviewer is silent. Mr. Mivart, on the contrary, is perfectly explicit, and the whole tenor of his remarks leaves no doubt that by religion he means theology; and by theology that particular variety of the great *Proteus*, which is expounded by the doctors of the Roman Catholic Church, and held by the members of that religious community, to be the sole form of absolute truth and of saving faith. (*Page* 8.)

He also professes himself greatly astonished to hear that any Christian writers of former times had shown

anything like a doctrine of "derivative creation" or "evolution"; and sets himself to analyze the evidence of any such fact, with the object, as he sarcastically declares, of being able "to put some Protestant Bibliolater to shame, by the bright example of Catholic freedom from the *trammels of verbal inspiration.*" To show that evolution is not inconsistent with theology, Mr. Mivart had quoted such ancient and mediæval writers as St. Augustine, Thomas Aquinas, and the more modern Suarez; and had expressly declared his opinion that "the prevalence of this theory (of evolution) need alarm no one, for it is without any doubt, perfectly consistent with the strictest and most orthodox *Christian* theology." Prof. Huxley, in citing this passage, adds a footnote, to the effect "that Mr. Mivart employs the term "Christian" as if it were the equivalent of Catholic," —a statement the fairness and decency of which we leave all who have read Mr. Mivart's "Genesis of Species" to judge.

As lovers of science we must protest against such a tone and method of treatment as are involved in these statements of Prof. Huxley, as altogether unworthy of his cause, unless, indeed, his cause be that of atheism: and, in fact, we are not disposed to be so charitable toward the Darwinian form of evolution in respect to its bearing on religion, as Mr. Mivart is himself, while he does not accept it. Prof. Huxley seems to object to confounding "religion" with "theology"; but if *theology* begins with recognizing the existence and government of a God, we must decline to accept from Prof. Huxley any *religion* that denies these two first principles of theology. His animus toward what he calls the "great Proteus" is not to be mistaken: and it does appear that he would not abstain even from the low artifice of seeking the applause of "Protestant Bibliolaters,"

by an assault on "that particular variety" of it which Mr. Mivart professes to hold as a *Roman Catholic*,—a fact we should have never discovered from Mr. Mivart's book, since he refers only to those truths or doctrines which are believed by all Christians alike. And to class St. Augustine, St. Basil and Thomas Aquinas with any modern party or school on the question of church organization, is very much as if one sought to get up a special claim to Shakspeare, or a prejudice against him either, on the ground that he happened to belong to the national church of the country in which he was born!

But we must ask Prof. Huxley, *cui bono?* To be sure, the question has but little to do with physical science itself, but if Mr. Mivart desires to assure the outside world which has no time for judging the merits of these matters, that there is no insuperable conflict between evolution (even Prof. Huxley's form of it) and the Christian religion, what is there in such an amiable wish to exasperate Prof. Huxley's sense of truth and propriety? Does the reference to the metaphysical speculations (not doctrines) of early Christian writers as to the cosmogony, seem to interfere with the boast that this new theory of evolution is "a new *creative* thought" of Mr. Darwin's own brain? If so, Prof. Huxley is too easily alarmed for the laurels of the "mutual admiration society" of modern English scientists; though he ought not certainly to be jealous of *any* theory of evolution which, like that of Mr. Mivart's at least, promises to commend itself to those who believe that there are more things in heaven and earth than are dreamed of in the philosophy of Mr. Darwin and Prof. Huxley.

It might indeed be said further, that Prof. Huxley more than suggests an ulterior object, of which he hardly leaves us in doubt, from the language he uses in

regard to the Christian Scriptures. He at least, is no "Bibliolater." But before he sets up as theologian, he ought to have told us what he means by the "trammels of *verbal* inspiration." He speaks of the "preposterous fable respecting the fabrication of woman," and says the IVth commandment, read in churches, states a *falsity* in regard to the creation, and not only that, but what Christians "are bound to know to be falsities," or if they use the words in some non-natural sense [*i. e.*, the word *day* for a long *period*,] they fall below the moral standard of the much abused Jesuit." And at the close of his examination of Mr. Mivart's "authorities," (in which all he makes out is that Suarez did not, after all, agree with St. Augustine, or follow him in full,) he sums up by saying that no man can be both a true son of the Church and a loyal soldier of science;" to which he adds such expressions as these, "that a hell of honest men will, to him, be more endurable than a paradise full of angelic shams": and whereas Mr. Mivart asserts that without a belief in a personal God, there is no religion worthy of the name," he rejoins, "that the worship of a personal God, *who, on Mr. Mivart's hypothesis, must have used language studiously calculated to deceive His creatures and worshippers is no religion worthy of the name.*" Let it be observed that he applies this semi-blasphemous language to an honest attempt to interpret the Scriptures in accordance with *any* theory of evolution, and is not willing to allow a Christian to understand by the "six days of creation" anything but the usual periods of twenty-four hours each.

Now all this is senseless objurgation, and utterly unworthy of science, though it *is* worthy of atheism. There is a painful air of petulance and juvenility about it,—of a zeal without ordinary discretion. There have

been theologians who insist upon the literal interpretation of the vision of creation in Genesis: (for the Bible begins with an Apocalypse as well as ends with one—both equally difficult to interpret, as both are beyond the reach of human observation, past or present,) while other theologians have reconciled Genesis and geology after the manner of Hugh Miller. Who gave Prof. Huxley the right to say, as his whole tone implies, that the Bible *can not be*, and *shall not* be at one with the actual demonstrations, we do not say the unproved speculations, of science? Will Prof. Huxley pretend to enlighten theologians by telling them that they must not see any symbolic language in the book of Revelation? He might as well do so as to presume to dictate their use of the word *day* in the account of the creation. Although his examination of Suarez, (he leaves alone the other authorities cited by Mr. Mivart,) exhibits his learning and cleverness pretty well, even if no other object were accomplished, yet his handling of this whole subject of theology, convinces us that even in "science" the old rule ought to hold good, *Ne sutor ultra crepidam.*

It was certainly a most senseless and unscientific procedure to take up a dispute with Mr. Mivart as to whether the thought of evolution had ever entered the mind of Christian writers of former ages. What more natural than that their speculations on cosmogony should have bordered on this as well as other theories, especially, when as we have shown before, something like the same thoughts had occurred to the greatest thinkers of Pagan antiquity before them? It is utterly aside from any practical purpose to review Prof. Huxley's examination of Suarez, for what does it signify to show that Suarez is disposed to be more *literal* on the question of creation than Augustine? And yet accord-

ing to his own showing, Suarez, like Mr. Mivart, "requires no divine assistance till he comes to man's soul," which he regards as the "substantial form" of man, proceeding in regard to the endless mutations of material bodies, upon the ancient principle "*ex nihilo nil fit*," which, after all, is only a doctrine of evolution. Whether Suarez himself actually applied the principle of the evolution of substantial forms to animals and plants, it is manifest that he held the principle. The passages which Mr. Mivart does quote from Augustine, Cornelius à Lapide, and Aquinas are directly to the point and prove what he designed to prove by them, as any one may see who will consult them in his chapter on "Theology and Evolution"—a chapter, which in our view, the most eminent philosopher of the age might be proud to have written. And if from any special interest, personal or scientific, Prof. Huxley feels bound to oppose the reconciliation of science and religion, he ought to be warned of what is portentously true, that the practical consequences of a mistake on his part to society and the world are a thousand fold more tremendous than any error in Mr. Mivart's views. The following words of the latter ought to be pondered by every student of science:

> The Christian system is one which puts on the strain, as it were, *every* faculty of man's nature, and the intellect is not, (any more than we should *a priori* expect it to be,) exempted from taking part in the probationary trial. A *moral* element enters into the acceptance of that system. And so with natural religion—with those ideas of the supernatural, viz., God, creation, and morality, which are anterior to revelation and repose upon reason. Here, again, it evidently has not been the intention of the Creator to make the evidence of His existence so plain that its non-recognition would be the mark of intellectual incapacity. Conviction, as to theism, is not forced upon men as is the conviction of the existence of the sun at noonday. A moral element also enters here, and the

analogy there is in this respect between Christianity and theism speaks eloquently of their primary derivation from one common source. Thus we might expect that it would be a vain task to seek anywhere in nature for evidence of Divine action, such that no one could sanely deny it. God will not allow Himself to be caught at the bottom of any man's crucible, or yield Himself to the experiments of gross-minded and irreverent inquirers. The natural, like the supernatural revelation, appeals to the *whole* of man's mental nature and not to the reason alone. None, therefore, need feel disappointed that evidence of the direct action of the First Cause in merely natural phenomena ever eludes our grasp: for assuredly these same phenomena will ever remain fundamentally inexplicable by physical science alone. (*Genesis of Species, p.* 287.)

Professor Huxley lays down the principle that reason and morality can not have "two weights and two measures," and adds that the antagonism between theology and science is due to the fact that men of science can not "allow that the belief in a proposition, because *authority* tells you it is true, or because you wish to believe it—which is a high crime and misdemeanor when the subject-matter of reason is of one kind, becomes under the *alias* of 'faith' the greatest of all virtues, when the subject-matter of reason is of another kind." Now as to "two weights and measures," can Prof. Huxley deny that mathematical evidence, which leaves no place for will or choice or judgment, is a different thing from moral evidence, which calls into play the elements of spontaneity and responsibility in man's nature? It is impossible that the affairs of the world, the administration of law, justice, and government, should proceed only upon the same "weights and measures," without which we deny any real advance to physical science. In the conduct of life, humanity could not wait for indisputable conclusions of pure science: and if Prof. Huxley denies that probable or moral evidence supplies adequate motives for human conduct, he ought never to trust his life to the good faith of his

fellow men, as he does every time he sits down to his dinner, but he should carry the processes of his laboratory with him wherever he goes. All subjects do not admit the application of the same "weights and measures." It is not merely in physical science that questions occur, "the conditions of which," as Prof. Huxley himself remarked in a former defence of Mr. Darwin, "are not only exceedingly complex, but so far as the great majority of them are concerned, are necessarily beyond our cognizance." And a man who endorses Mr. Mill's declaration, "that there are multitudes of scientific inquiries in which the method of pure induction helps the investigator but a very little way," ought not to complain of or sneer at "two weights and measures" for science and theology, under the name of reason and "faith." As it is, Mr. Darwin's own books give the most conspicuous illustration of these two "weights and measures" indicated by Mr. Mill.

And as to the "Baal of *authority*, with all the good things his worshippers are promised in this world and the next," against which Prof. Huxley seems to cherish some groundless resentment, as if it really were opposed to the progress of science, we suppose there must be some "authority" somewhere, so long as all men have not arrived at the knowledge of all truth. Even "science" must in the nature of things, come to the vast majority of mankind on "authority"—say the authority of Prof. Huxley and his illustrious compeers. Whether the world would have ever got on without the conception of some higher "authority" than that of the "social compact" or of human laws, is a question in which the interests of civilization itself are bound up. Does Prof. Huxley believe that the civil penalties against perjury have had or have now in society any effect at all comparable to that of the *religious* sanction of an oath?

And yet respect to the obligation of an oath, is that upon which the most secular forms of government are obliged to rely, to make government itself practicable.

The question of "authority," however, resolves itself at last into the question whether there is a God, and whether it is morally probable and historically true, that a revelation of Him and His will has been made to the human race. Under atheism, of course there is no "authority," and no law but the chances of Natural Selection, by which all *Right* is but the *Might* of the stronger.

But it is time to have got quit of this "theological" discussion which Prof. Huxley bestows so much attention upon, as if it were a matter of vital importance to show that Christian writers of former times had *not* dreamed of evolution as a possible discovery of science, or that such a theory is reconcilable with Christianity as it has come down to us. For our part, we do not admire his taste, or his apparent object in so far traveling out of the legitimate province which a scientific advocate of any theory of evolution is strictly called to fulfil.

In coming to the psychological criticisms on Darwin's theory, Prof. Huxley falls foul of the *London Quarterly's* analysis of the intellectual powers,* under the two-fold classification of Presentative, or instinctive faculties, and Representative, or reflective faculties. He finds fault with it because it omits to give an account of the sensibilities and the will, when it simply professes to be a formula of the intellectual faculties. He objects to "drawing a hard and fast line" between

* This, in a previous article of this series, was by a typographical error, credited to a number of the *Edinburgh* of the same date, (July, 1871.)

thought and sensation, and says "that faint reproduction of a sensation which we call the memory of it, is properly termed a thought." This is a mere playing upon words, by which any kind of impression upon the mind,—perhaps even the mere reflex action of the nervous system, like an infant's seeking its mother's breast, might be put on a par with the elaborate reasoning processes by which Prof. Huxley would establish some proposition of natural science. Sensation certainly is not thought, however it supplies objects of thought to a mind previously capable of thinking in the proper sense of that word, as distinguished from mere feeling. A man may allow himself to be guided by mere sensation, and the association or memory of sensations, and thus assimilate himself to the brute: but that he *possesses* faculties different in kind as well as degree from those of the brutes, is what every system that deserves the name of a philosophy among men has always recognized. We are not concerned to adopt or reject the analysis of the *Quarterly Reviewer* in all its details, but the general outline of his classification into presentative or "indeliberate" faculties on the one hand, and the reflective or rational faculties on the other, is by no means new or peculiar. Sir William Hamilton makes the two highest elements of the human mind to be, 1st, the *Discursive* or elaborative faculty, which performs the work of generalization or comparison, and which corresponds to the Διάνοια of the Greek, or *thought*, properly so called; and 2d, the *Regulative* faculty or reason, which corresponds to the Greek Νοῦς, intellect or common sense. Under this last head comes what is called by others Intuition or Insight, which is not so much a *faculty* of reason, as a *light* without which no exercise of reason is possible, or as Sir William Hamilton calls it, "the complement of the fundamental principles or laws of

thought"—a complement of *à priori* native cognitions, under which our knowledge *à posteriori* is possible. It is these elements which have nothing, so far as we can discover, corresponding to them in the brute creation. And if the *Quarterly Reviewer* is correct in showing this difference *in kind* as regards powers of intellect, *à fortiori* the argument will dispose of the question of moral obligations, emotions, sense of right and wrong, of the supernatural, &c.

Two things ought to be remembered in this controversy: 1st, that the mental operations of brutes is not a subject that can come within the sphere of human consciousness at all, and therefore can not be spoken of with the same certainty as that with which we analyze the phenomena of the human mind; and, 2d, that the *onus probandi* lies with those who assert that our mental faculties are but the developed instincts of ants and bees. We can not be called upon to *prove* a negative hypothesis: but to go at the subject of psychology from the side of natural history alone seems about as unlikely a way to prove the Darwinian account of the origin of intellect as it would be to try to explain the mysteries of palæontology by the aid of inorganic chemistry alone. Even Mr. Darwin admits this difference between man and the lower animals, that man has to *learn* his work by practice, even such things as the lower animals do from the start instinctively and without conscious intelligence; but he assumes that the development *into* conscious intelligence is the result of "variations" arising from "unknown causes acting on the cerebral organization." We have no objection to the confession of ignorance implied in resorting to the expression, "unknown causes," but of the positive part of this statement there is not a vestige of proof.

Prof. Huxley gets up a comparison between the pro-

cesses that take place respectively in the minds of a gamekeeper and a hound in leash when a hare crosses the field of vision, and attempts to show that they are identical. He says: "In the dog there can be no doubt that the nervous matter which lies between the retina and the muscles undergoes a series of changes, precisely analogous to those which in the man, give rise to sensation, a train of thought and volition." He insists that if the processes in the man are accompanied by consciousness, those in the dog must be so too. He believes the only alternative to this is, with Descartes, to consider all animals unconscious machines. But is this the only alternative? If Prof. Huxley's notion of an identical *neurosis* and *psychosis* in dog and man is correct, then there is no such thing as *instinct*, and there can be no such thing as automatic actions, properly speaking. We would ask Prof. Huxley whether, supposing neither the dog nor man had ever seen a hare before, the *neurosis* in the two being the same, the psychosis might not be entirely different? It is a fact not to be got over in this way, that these actions of animals are performed in the same way from the first, (it would be absurd to maintain that animal *training* by mere association is the same as *education* of the intellect in man,) and that they are performed without regard to those considerations of purpose, consequences, time, place and circumstance which pass through the mind of man in connection with an action. Why does a beaver try to build its dam when confined in a dry courtyard? The phenomenon is perfectly familiar to us of various animals endeavoring to perform instinctive actions in circumstances of ludicrous impossibility. Instinct need not be a mere matter of mechanism, but it certainly must be an innate law of action working by inherited impulse, and not a matter of acquisition or educability at

all. As such it differs essentially from the intelligence of man. If instinct be only a form of intelligence, it would be in many cases far superior, *quoad* intelligence, to the intelligence of man. In fact the perfection of animal instinct, as compared with the tentative efforts of human intelligence *toward an ideal*, presents very much such a contrast as a bee's string does to a cambric needle under the microscope. There is certainly no evidence of self-consciousness in brutes, or the power of reflecting upon and analyzing their sensations, what they are and why they are, of drawing general inferences and predicating universal abstract propositions. They have consciousness, so far as sense perception implies consciousness, but it is only the consciousness of sensation. As Prof. Haven remarks, "the brute feels and acts; man feels, *thinks*, and acts." And feeling alone no more involves or requires intelligence, or the operations of intellect, than instinct does. And as to memory, it can not be proved that brutes *retain* images and sensations, but only that they *recognize* them when re-presented, which is a different thing. How can Prof. Huxley know that they can of themselves recall things that are absent, or sensations that are past? One may see how far short he falls of the differentia of real intellectual operation by his remark:

> If a machine produces the *effects* of reason, I see no more ground for denying to it the reasoning power, because it is unconscious, than I see for refusing to Mr. Babbage's engine the title of a *calculating* machine, on the same grounds. (Page 34.)

This is mere sophistic, rhetorical *accommodation* of words. He would doubtless say also that the idiot boy who displayed a marvelous power of summing up numbers, ought to be called a mathematician, though he could not tell how he did it. But the fact is, the idea of an *unconscious* intelligent agent is positively un-

thinkable: and Mr. Darwin's attempt to reduce the spontaneous activities of thinking, reasoning beings to the category of blind physical law or impulse is but an attempt to eliminate all intelligence, according to any possible conception of it, out of the universe altogether.

As is well known from his views of the "Physical Basis of Life," Prof. Huxley believes that "our thoughts are the expression of molecular changes in that matter of life which is the source of our other vital phenomena." In answer to the criticisms of Mr. Wallace and Prof. Tyndal upon this view, referred to in one of our previous articles, he now says that though there is evidence of some correlation between mechanical motion and consciousness, he does not pretend that the nature of that correlation is known or can be conceived, and then adds:

> Mr. Wallace presumably believes in that correlation of phenomena which we call cause and effect as firmly as I do. But if he has ever been able to form the faintest notion how a cause gives rise to its effect, all I can say is, that I envy him. . . . . In ultimate analysis, everything is incomprehensible, and the whole object of science is simply to reduce the fundamental incomprehensibilities to the smallest possible number. (Page 38.)

This number can never become very small then, for what can have a wider range than "that correlation of phenomena which we call cause and effect"? This is a good deal like giving up the question. Suppose it shown that every state of consciousness—every thought and feeling of the mind—is accompanied uniformly by certain molecular changes in the nervous matter, by what logical right does he call the one the "expression" of the other, or compare their relation to the process which goes on in an electric battery? As Prof. Tyndal says, anticipating this sleight of rhetoric, "the cases differ in this, that the passage from the current to the

needle, if not demonstrable, is thinkable, and that we entertain no doubt as to the final mechanical solution of the problem: but the passage from the physics of the brain to the corresponding facts of consciousness is unthinkable." Prof. Huxley ignores this distinction altogether, and merely repeats the old materialist fancy so effectually exploded by Prof. Tyndal. "The utmost he can affirm," to use Prof. Tyndal's language again, "is the *association* of two classes of phenomena of whose real bond of union he is in absolute ignorance."

But, after all, even on the spiritual theory of the existence of the soul as a separate entity, can Prof. Huxley show that there should not have been precisely this association of two classes of phenomena, physical and psychological: if the reasonable soul was joined to a material body for a habitation in this world, and for normal relations with it? Though these speculations must ever carry us out of our depth, it would seem that this correlation of physical processes to consciousness is what *ought to have been*, under this theory, and in no manner militates against the essential existence of the human soul itself.

Nothing can show the superficial character of Prof. Huxley's metaphysics better than the following passage, in which the distinctive nature of the *reason* of man, as distinguishing him from the lower animals, is treated merely with a *bon mot:*

> If man is not to be considered a reasoning being, unless he asks what his sensations and perceptions are and why they are, what is a Hottentot, an Australian black fellow, or what the "swinked hedger" of an ordinary agricultural district? Nay, what becomes of an average country squire or parson? How many of these worthy persons who, as their wont is, read the *Quarterly Review*, would do other than stand agape, if you asked him whether he had ever reflected what his sensations and perceptions are, and why they are?

The gift of language alone, inconceivable apart from reason, puts the Hottentot, as a reasoning being, at an infinite remove from the highest animal, not as a matter of *degree* or distance merely, but of kind and nature. Prof. Huxley's logic would be, that a parrot has the rudimentary gift of language, because it can articulate; just as the *calculating* machine "produces the *effects* of reason." But can not a child see that language implies the power, even in the Australian black fellow, of reflecting upon his perceptions, comparing them, conveying them to others, judging of them, and acting upon them, as no voiceless brute ever could do? These lowest specimens of humanity *do* reflect upon their sensations, and do seek for *causes* as no animal does. Besides, they have all the faculties we have, whether they use them or not, and even if they have no use for them—a fact which completely overthrows the whole theory of natural selection as applied to man. The "swinked hedger" can be developed into a Gladstone, and the Hottentot into a Bishop of Sierra Leone. If there is no difference in kind between instinct and intelligence, why in all these ages, nay, why in the life of a single ape, could there not be the development of some rudiments of language in the highest of the animals below man? It certainly is not because of undeveloped principles in them—it is because the essential principle is *not there to be developed:* that is, the Thought and Reasoning faculty of man. Prof. Huxley's gird at the old conservative *Quarterly* and its readers, ought in fairness to have been distributed; for he must have seen in the *Edinburgh*, of the same date, an article which in some respects is stronger than that in the *Quarterly*. It declares that "to interpret the mental processes of lower animals by our own standard, is to be guilty of an anthropomorphism quite as great as that which the mate-

rialists lay to the account of theologians;" that "if our intellect and moral sense be mere developments of certain elements in the lower animals by natural selection, man is merely a superior sort of brute, the great Ruler of the world a mere shadow of ourselves projected by our imagination, and our morality a mere instinct of the same order as that which rules the actions of the worker-bee:" and that though Mr. Darwin states that his argument does not touch the question of the existence of a God, yet "it completely destroys the objective value of any idea which we can form of Him, and this practically amounts to the same thing." Perhaps it is because Prof. Huxley substantially and *con amore* agrees with this "theological" aspect of the question, that he does not care to controvert it. If we conceive that the brute creation has no conception of any relation to God, that to it God is an unknown and unknowable thing, it is precisely that condition to which materialism proposes to reduce the human mind. The writer in the *Edinburgh* discusses Mr. Darwin's theory of language and of sexual selection rather more incisively than the *Quarterly*: and he sums up his consideration of the non-physical characters of humanity with the remark:

> To measure man's superiority over the brute by his bodily frame is the only method by which a naturalist can construct his system: but to proceed to say that there is a corresponding identity of mental character between man and brute is to refuse to acknowledge facts in psychology which are as well ascertained as any of those in natural history. Till Mr. Darwin can show that the higher faculties of the human mind, such as the power of abstract thought and of forming general ideas, are merely developed from rudiments in the brutes by natural selection, his conclusion that the human mind is the same in kind with that in the brutes, is a mere assertion without proof. To discuss the problem with these important factors left out, is to play Hamlet with the character of Hamlet left out. (*Ed. Rev.*, July, 1871.)

This reminds us that Prof. Huxley has gone further and faster than Mr. Darwin himself. The above paragraph refers to the fact that Mr. Darwin declines to discuss metaphysically the higher intellectual faculties of man, such as self-consciousness, abstraction and the comprehension of universals, though he believes them the result of a high development of mental powers, leaving us to get what definite idea we may out of this vague language; and the reason he gives for not discussing them is that "hardly two authors agree in their definitions." Mr. Darwin did not consider that this omission was fatal to the value of his argument, but Prof. Huxley sees the necessity of reconciling the novel hypothesis with the accepted views and ascertained facts of psychology. And how, after all, has he helped his friend in this matter? By dragging him down to the sorry refuge of the baldest materialism. By assuming that all "*psychosis*" is but the result of correlated "*neurosis*," that mental action is only molecular change, even as motion and heat are convertible, or as the chemistry of an electric battery gives rise to the phenomena of light and sensation in the retina of the eye. Ought we not to be thankful to him for his forbearance in the following sentence?—"Whether we shall ever be able to express consciousness in *foot-pounds*, or not, is more than I will venture to say." But when driven into a corner and challenged to show or prove the passage or fact of passage from the physical to the non-physical, he defiantly turns upon us with a declaration of the inscrutability of the real relation of cause and effect in general, and of the incomprehensibility of any phenomenon whatever in its ultimate analysis. The question then is, whether, by his new theory, he has not *multiplied* incomprehensibilities instead of diminishing them —whether, in fact, by his own confession his whole sys-

tem of physico-metaphysics is not turned into a mere castle-in-the-air? At any rate, until he can give us something like proof—something at least that does not contradict all previously recognized laws of thought, we shall be content to apply to this subject the dictum of Prof. Tait, before cited,* that "the assertion that not merely life but even volition and consciousness are mere physical manifestations, is an error into which it is not possible for a genuine scientific man to fall, so long at least as he retains his reason." That Prof. Huxley has now fallen into it, and wilfully ranges himself in the category of those who make that assertion, we think must be evident to his most earnest admirers.†

So far then as regards the intellectual powers of man. If Prof. Huxley and the Darwinian theory fail here, much more must they fail when we come to the still higher department of man's nature, the moral or spiritual. For intellect is not the best part of man, even though natural science has little nourishment for any

* *Jour.* for October, 1871, Art. No. 1, page 22.

† Since the above was written, we have casually met with the clear and excellent work of Dr. Noah Porter, of Yale College, on "The Human Intellect." His summing up on this very point is so conclusive that we subjoin it here, in his own words:

The argument of the Materialist stands thus: Certain psychical states or processes require as their condition certain organic bodily affections. Those bodily affections, however, are totally unlike the mental state which they conditionate. In every case in which they do occur they present new objects of apprehension and feeling. By these, and by these only, the soul receives its knowledge of the material world. Certain other mental states, far more numerous and far more important, are attended by no affections of the body whatever. Which then is more philosophical, to assume that such organic changes do occur when we can not trace their presence, nor any appearance of the organ in which they might be traced, or to which they might be referred, because, forsooth, they do occur when we can trace them and can give the reason for their occurrence; and then, with the aid of this unauthorized assumption, to infer that the soul and body are one organism;—or to disbelieve that such bodily changes do occur as the condition of mental activity, when we have no evidence from observation and no presumption from analogy?

other. Our intellectual superiority is a glorious thing, but it is compatible with the life of a brute. Taking this alone, *a priori* there might be some plausibility in developing it out of the accurate instincts of lower animals, so independent is it of the will and other moral qualities of man. It might be even a splendid intellect that should seek to reduce man to a mere category of the brute creation. The education of intellect alone nowhere touches what we call the *heart*, or moral nature of man, which supplies all his motive power, which carries the *whole* man with it, intellect and all, and "out of which are the issues of life."

Prof. Huxley objects to the elementary distinction between formal and material morality, dwelt upon by Mr. Mivart, and says that "the adoption of any such principle is the denial of all moral value to sympathy and affection." That is, we suppose, to maintain that an act to be *moral*, must proceed from a *conscious will*, would cut him off from attaching the moral quality to the affection of a bird for its young, or of a dog for his master. This is the gulf to be bridged, and Mr. Mivart simply breaks down the bridge. And Prof. Huxley we find now actually advocating the absurdity of unconscious moral acts! This goes far beyond the *opus operatum* theory of virtue or grace supposed to be held by that school of theologians against which Prof. Huxley in the outset sought to excite prejudice. Mr. Mivart is the one that is found to vindicate the popular religious and ethical axiom, that there is no *moral* quality in any act where there is no conscious will directed toward the fulfilment of duty. Prof. Huxley says that, "if mankind ever generally accept and act upon Mr. Mivart's axiom, they will simply become a set of most unendurable prigs." This would certainly be disagreeable and inconvenient. But it is quite important to know what

true morality is. What he and Mr. Carlyle seem to describe as unconscious morality, is really nothing more or less than the character of *habitual* goodness. Will Prof. Huxley say that the movement of the fingers of a practised player upon a piano is, in the proper sense of the words, either unconscious, or automatic? A life *trained* to virtue, from the love of virtue, may often show what looks like unconscious moral action: but after all, does not the will act as rapidly and unobservedly as either the intellect, or if you please, the reflex action of the nervous system? Unconscious moral action is simply a contradiction in terms. Mr. Mivart said that "there is no trace in brutes of any actions simulating morality which are not explicable by the fear of punishment, by the hope of pleasure, or by personal affection." To this Prof. Huxley replies:

> But it may be affirmed, with equal truth, that there is no trace in men of any actions which are not traceable to the same motives (!) If a man does anything, he does it either because he fears to be punished if he does not do it, or because he hopes to obtain pleasure by doing it, or because he gratifies his affections by doing it. (p. 41.)

Here he takes leave, indeed, of his "unconscious morality," but throws us into a maze of bewilderment at the incredibly low standard which he says is sufficient to comprehend all human action. Plato, Kant, Coleridge have all written in vain! Here is the moral outcome of materialism. If Mr. Mivart says that according to the Darwinian theory, "virtue is a mere kind of *retrieving*," Prof. Huxley goes to work to defend and justify the comparison in the same sense that "sculpture is a mere way of stone-cutting." But with all this logomachy it is not possible for Prof. Huxley in this way to reduce the trained habitual character of an educated moral agent to a level with the blind, uncon-

scious instinct of an unreasoning animal: even though he brings to his aid the hereditary transmission of many qualities of character in men. It is part of the very differentia of man to recognize in himself these transmitted qualities, with all his animal appetites and passions, (which no mere animal ever does,) and a part of his moral probation to act accordingly.

To Mr. Wallace's objections to Darwin's "Descent of Man," Prof. Huxley gives briefer and still less satisfactory attention. The crucial point of the large size of brain in the lowest savages as compared with that of the highest apes, he disposes of in a manner bordering on flippancy. He makes out a formidable account of what savages are compelled to know and do, in order to exist in savage life, which contrasts rather strongly with what he had supposed of their brute stolidity in regard to the power of *reflecting* upon their own sensations, in which respect he classed them with the "swinked hedger" and "average country squire or parson." He now says:

> In complexity and difficulty I should say that the intellectual labor of a good hunter or warrior considerably exceeds that of an ordinary Englishman. The civil service Examiners are held in great terror by young Englishmen: but even their ferocity never tempted them to require a candidate to possess such a knowledge of a parish as Mr. Wallace justly points out savages may possess of an area a hundred miles, or more, in diameter. (Page 46.)

Now this means, if it means anything, that savages have use for all the brain with which they are endowed, which is an absurd statement. But how happens it, that if, as Prof. Huxley maintains in another place, they do not reflect upon their own perceptions, "what they are and why they are," they have yet the faculties and capacities for doing this, when by his own showing, such faculties should be developed only by the "selective influences" of civilization? This ques-

tion he does not answer. But he goes further and tries to qualify the fact that intellectual faculties are proportioned to the size of brain, by instancing the porpoise, and comparing wolf with dog. Does he mean to say that the brain of the savage being just like that of the civilized man is an exceptional phenomenon in nature: or does he mean to controvert the "correlation" of brain-power to mental superiority? As he does not carry out this argument, it is difficult to see what he does mean. He refers to the competitive or "selective" influences of civilized life "in favor of novelists, artists, and strong intellects of all kinds." To carry this out he ought to be able to show that "favorable variations" like Shakspeare, Goëthe, and Sir Walter Scott are transmitted by heredity!

We quite agree with Prof. Huxley that "the great need of the doctrine of evolution is a theory of variations," and it is our opinion that something definite of that kind is required to give even a decent foundation to the theory of Natural Selection. He now admits that "variation is *not* indefinite, nor does it take place in all directions, *because* it is limited by the general characters of the *type* to which the organism exhibiting the variation belongs." We question whether this admission is not at least dangerous to the whole superstructure of Mr. Darwin's system. For if variation *is* so limited, within a certain cycle around a definite *type*, as the *North British Reviewer* for 1867, (referred to in a former article) contended, then how does variation and selection account for the origin of *new* types, or species? Even this then is not *proved;* while, if it were proved, the labor of Sisyphus must still be undertaken to bring the whole nature of *man* within this theory of Hopeless Materialism.

Αἶτις ἔπειτα πέδονδε κυλίνδετο λᾶας ἀναιδής.—*Od. xi.*, 597.

IS INSANITY A DISEASE OF THE MIND, OR OF THE BODY?

The Dependence of Insanity on Physical Disease, by JOHN P. GRAY, M. D., Superintendent of the New York State Lunatic Asylum. [Read before the Medical Society of the State of New York, at its annual meeting, February 7, 1871.] *American Journal of Insanity*, April, 1871.

Materialism in its Relations to the Causes, Conditions and Treatment of Insanity, by H. B. WILBUR, M. D., Superintendent of the New York Asylum of Idiots. [A paper read before the Association of Superintendents of Insane Asylums, at the last annual meeting, at Toronto.] *Journal of Physiological Medicine*, January, 1872.

The papers here cited present two opposite views held by pathologists as to the nature, causes and treatment of insanity. On the one hand it is held to be a disease of the brain, originating in that organ or in other parts of the body, depending on physical causes, or on moral causes only so far as they are capable of producing physical effects, and to be treated by the same methods as other bodily diseases. On the other hand it is held to be a disease of the immaterial mind, depending for the most part directly on moral causes, and to be treated mainly by moral agencies. The object of this paper is to define as clearly as possible the views of these two schools of pathologists and discuss some of the problems involved.

I.

That a certain relation of mutual dependence exists between the mind and the brain is generally admitted by metaphysicians as well as by physiologists; but

while the former occupying themselves exclusively with the phenomena of consciousness lose sight of their dependence on the brain, the latter, engaged in the study of physical structure and material movements, lose sight of mind, and confound mental phenomena with cerebral movements. It becomes then of some importance to establish the distinction between these two kinds of phenomena, and to define the relation they bear to each other.

By means of the five senses we observe certain things and phenomena, which together make up the whole external world known to us. The study of these things, their description and classification, the analysis of these phenomena, and the determination of the laws regulating their order of succession, constitute the matter of physical science.

There are other phenomena which we do not find by the five senses, but by a faculty called consciousness, which we do not refer to the external world but to our own selves, as occurring in us. Thus, I know that I am now thinking on a certain subject and that certain thoughts succeed each other within me. How do I know this? I can not see nor hear myself think; though all my senses were abolished I might still think and know that I was thinking. I can only say that just as I hear and feel and see the things and phenomena around me, so I am conscious of thought, emotion and will within me. I am even more sure of this latter knowledge than of the former, for my senses have often deceived me, and I receive their testimony with some distrust; but when I am conscious that I feel or think or will, I am sure I am not mistaken. I may admit that my thoughts are erroneous, that my feelings are unworthy or my volitions criminal, yet it would be absurd for any one to try to convince me that I am not think-

ing, or feeling, or willing, when my consciousness tells me that I am.

Here then are facts of which we are most sure, which are not cognizable by the senses, but by consciousness; which are not movements or changes in the external world, but which occur within ourselves; and these facts may be observed, studied and reduced to a science. As out of the materials furnished by the senses, the physical sciences are constituted, so out of the facts of consciousness is constituted the science of Psychology.

The facts furnished by the senses have relation to the extended, moving thing we call matter, and so physical science is the science of matter. A fact of consciousness, such as thought, emotion or will, has no relation to extension nor figure, nor movement in space, nor any other material attribute, and hence we say it does not belong to matter, it is immaterial. As we name the substance having the attributes of extension and motion, *matter*, so we name the substance to which belong the attributes of thought, feeling and will, *mind*, and Psychology is the science of mind.

We have then these two great divisions of human knowledge, into Physical Science and Psychology.

If, having established this distinction, we stop short and consider these two divisions of science as having no relation to each other, we fall into a grave error, and form a very inadequate idea of Psychology. The phenomena of consciousness are connected with certain molecular movements of the brain, and dependent on them, and although these movements are not the phenomena of consciousness they are necessary factors in their production.

Physiology has demonstrated that mental phenomena are connected with molecular movements of the brain, so that during every thought, emotion or volition, move-

ments in the cerebral hemispheres parallel to these, but distinct from them, go on. A blow on the head may suspend these movements, and with them the accompanying mental operation; a torpid circulation through the cerebral capillaries, or a depraved condition of the blood, impedes them; disease of the brain perverts them. What is the exact nature of these material conditions accompanying mental phenomena? What is their exact seat in the hemispheres? Physiology gives as yet no satisfactory answer to these questions; it has only established the existence of these movements. When a man is angry or frightened, a molecular cerebral change occurs, which certainly is not anger or fright, but the necessary material condition of such emotions; and if the science of the physiologist were sufficiently advanced, and all the parts could be exposed to his observation, he might interpret this molecular movement, and know that anger or fright existed in the mind of the person; just as a telegraphic operator, hearing the click of his instrument, knows the message it is carrying.

The relation which the cerebral movement bears to consciousness, presents the most obscure and difficult subject of human speculation, and all efforts to form any adequate conception of it are vain. The progress of physiology may hereafter demonstrate more clearly the nature of the nervous movement, and the seat of it corresponding to various mental conditions; but whatever advance may be made in this direction, there must always remain between the physiological and the psychological phenomenon an immense gap which we can not fill, even with a plausible hypothesis.

As far as our experience goes, mind, in a state of activity, never exists without a living brain. As to the mode of existence of the soul after death, we can know nothing by experience, nor can we draw any deduction

by reasoning. The Christian Church teaches as a fundamental article of the creed, "the resurrection of the body;" and although different interpretations have been put on this, yet it seems, at least, to point to the continuance hereafter of some relation between the soul and body, like that now existing.

Some physiologists, occupied with the study of physical phenomena, using their senses more than their consciousness, see only the cerebral movements accompanying mental operations, and neglect the latter or confound them with the former. Thought, feeling, and will, are by them called functions, or products of the brain, just as secretion is a product of glands; and hence the existence of mind is denied, and psychology becomes for them only a chapter of physiology. These are called Materialists.

This view is weaker than that of those psychologists who overlook the action of the brain accompanying mental phenomena; for it is possible to construct a science out of the facts of consciousness alone, but it is not possible to take the first step in mental science, if we reject the data of consciousness. No possible study of the brain could suggest the idea of anger or fear, if we had never felt these emotions in our consciousness. We might learn the nervous movements accompanying them, but these are not anger or fear, any more than the click of the telegraph is the intelligence it transmits. When I read of thought or emotion as a secretion or product of the brain, the words convey to me no idea whatever. It is as though one should say that thought is a triangle. I can conceive of molecular movements of the brain as giving rise to other movements, or as generating products, having extension and mobility, in short, some form of matter; but thought is a phenomenon occurring in myself and not in my body; it is not a material

thing, nor has it the attributes of matter, it is not a product of the brain, though the brain may be necessary for its production.*

The preceding statement was necessary before entering on the main questions discussed in the papers, because their solution must depend on the views adopted of the relation of the mind and mental operations to the brain and cerebral movements. Dr. Gray advocates the views which have been here put forth, fortifying his position by extracts from writers on the subject, and expressly discarding the doctrine that the mind is a "mere result of cerebral action, and thus a material substance, a mere secretion liable to disease and death." It is to be regretted that Dr. Wilbur should have entitled his paper, which is mainly occupied in contesting the views of Dr. Gray, "Materialism in its Relations, &c.," as if the latter were a materialist; for this word is now deservedly odious, as representing a doctrine weak in science and unsound in morals. He does indeed say that Dr. Gray has avowed himself to be no materialist, but intimates that this avowal is not consistent with his pathology of insanity.

It is not easy from his paper to arrive at Dr. Wilbur's views on this point. He believes in the existence of mind as something apart from the body, and also in the reciprocal influence of the mind and body, but seems to confine this influence within very narrow limits.

---

* If we would speculate on this problem, which we can not solve, instead of considering the mind as a product of the brain, it may better be maintained that the brain is a product of the mind, which has formed this organ as a means of communicating with the external world, acting at first unconsciously as the plastic force presiding over the growth and development of the body, and when it has formed the nervous system, attaining to knowledge of the external world and to self-consciousness.

He says, page 42, as expressing his own views: "The brain was regarded as the organ of mind, the instrument through which the sensational basis of thought or mental action was received, one remove nearer the thinking ego than the nerves of sensation and the organ of mind in fulfilling its purposes; behind in course and action the nerves of voluntary motion. Like the other and subsidiary portions of the nervous system it is subject to the laws, conditions and effects of agency."

The meaning of this passage is not clear. In considing "*the brain as the instrument through which the sensational basis of thought and mental action is received*," he seems to hold that the brain is the organ by means of which the impressions made on the senses, "the sensational basis of thought," are transmitted to the mind, which then in comparison, judgment, memory, as well as the emotions, acts on the impressions thus received, and that all these mental operations founded on this "*sensational* basis," take place in the immaterial mind, without any cerebral action or movement. The mind also communicates its volition to the portion of the nervous system connected with the nerves of voluntary movement. In other words, that the mind is placed between the senses which put it in communication with the external world on the one hand and the organs of voluntary movement on the other, and that in all its intermediate intellectual and emotional actions, the brain has no part whatever. If this is the doctrine he holds, it leaves that large portion of the brain between the ganglia of sensation and the apparatus of voluntary movements entirely without functions; and yet this portion, embracing the whole of the cerebral hemispheres is developed in the proportion of the extent and activity of those same mental operations. It would be easy to show by citations that this view is opposed to

all the best teachings of modern physiology, and for that reason it would seem unfair to attribute it to Dr. Wilbur, if it were not that the passage occurs in a statement he makes of the greater soundness of the physiological views of the relation of mind to body formerly held, than of those prevailing within the last "twenty years." These peculiar physiological views are in general accordance with the rest of the paper, and furnish a key to the understanding of the "causes, conditions and treatment of insanity" adopted by him.

II.

Application of the Views to the Study of the Causes and Nature of Insanity.

In insanity the mental operations, intellectual, emotional and volitional are disturbed and perverted, and the question arises, does this perversion depend on a change in the entity called mind, or on a structural change in its instrument, the brain?

For those who maintain that the mental operations are only products of cerebral action, that the brain is the mind, no such question can arise. According to their view, a diseased brain gives rise to disordered mental phenomena just as a diseased kidney secretes morbid urine.

So on the other hand, those metaphysicians who shut their eyes to the relation of the mind to the brain, who consider the mental operations as produced by the activity of the entity called mind, without any dependence on the brain, necessarily see in insanity only a disease of the mind.

The question can only arise among those who admit a relation of inter-dependence between the mental operations and the brain. Among these there are some who maintain that although disease of the brain may induce mental derangement, yet that in a certain number of

cases, mental derangement exists without cerebral disease, or at least pre-exists to it, and constitutes the primary and essential element of the ailment; while others maintain that there is no such thing as disease of the immaterial entity called mind, and that in insanity there is always disease of the cerebral structure, and that the morbid mental manifestations depend on this disease.

It is impossible to establish by adequate scientific evidence either of these hypotheses, for neither is susceptible of direct demonstration, and both explain to a certain extent, the facts of insanity; but the strong tendency of opinion among pathologists is towards the adoption of the latter, as being more completely coincident with facts and more in analogy with physiological and psychological science.

We know that physical disease of the brain originating in itself or in other organs often does cause mental derangement. In meningitis or accidental violence, the delirium follows so manifestly the physical lesion that there can be no doubt as to which is cause and which is effect. The same may be said of those transient mental derangements caused by medicines or by temporary ill health. The dullness of mind during laborious digestion is plainly due to cerebral change caused by gastric irritation. In the mental torpor and derangement caused by the circulation of diseased blood through the brain, as in uræmia, anæmia and other diseases of this character, the same order of sequence is manifest.

All agree then, that morbid conditions of the brain may cause morbid mental phenomena; but while some hold with Dr. Gray that these material conditions are present in all cases of insanity, others hold with Dr. Wilbur that these material conditions are in many cases

absent, and that in those cases in which they are found, they are the consequences and not the causes of the insanity.

The cases in which no lesions are found after death in the brain of the insane, are now rare and may be considered exceptional. In proportion as the science of cerebral histology has advanced, and as the means of investigation by the microscope has become more extended, these exceptional cases have become more and more rare, and it may now be fairly concluded that the reason for their occurrence is to be sought in the still imperfect condition of our means of research, or in the want of due care. We may reason here as in the cases of sudden death, in which expert pathologists fail to find any lesion sufficient to account for death, and in which we attribute the failure to the imperfection of science, or want of sufficient care, rather than to a disorder of the vital principle apart from any physical lesions.

It is, however, maintained by those who hold insanity to be a purely mental disease, that even admitting the presence of cerebral lesions in the great majority of cases, or even in all cases of insanity, yet that these lesions are the results or concomitants, and not the causes, of the disordered mental operations.

It may be true that the perversion and violence of the mental operations of the insane give rise to cerebral disease, for this is the conclusion to which our physiological knowledge would lead us. If every mental act is accompanied by some corresponding molecular movement in the brain, it would follow that when these acts are intense and prolonged, the molecular movements will be of like energy, and may result in a permanent change of structure. As a gland, whose functional action is from any cause perverted or excessive, becomes

after a time changed in its structure, and then though the cause ceases to operate, this change of structure perpetuates the morbid functional action; so it is conceivable that the brain may become diseased by reason of mental excitement, and continue to exhibit morbid phenomena when the excitement ceases to operate. Thus we may understand how the ravings of an insane man may produce or aggravate disease of the brain, and while I can not admit that a man with a perfectly healthy brain can be insane, yet I would not maintain that a portion of the cerebral lesions found in the insane after death, may not be due to the insanity itself.

In the study of these phenomena we must keep constantly in view the inter-dependence of the brain and mental operations. Disease of the brain causes disordered mental acts, and these by their violence and irregularity cause disease of the brain, and thus the primary disease is extended and aggravated. Chronic gastritis causes indigestion, and this indigestion leaves the food to ferment in the stomach, aggravating by its presence the gastritis, and thus the consequences of the disease increase the disease. Doctor Gray has pointed out how different forms of insanity pass through dementia in their progress towards recovery. May it not be that the repose of dementia puts a stop to this action of disordered mind in extending and increasing the cerebral disease, leaving this disease to be overcome by natural processes, and acts like abstinence from food in gastritis, relieving the inflamed surface from the irritation of matters it no longer can digest?

Admitting then that mental excitement may influence the cerebral structure and cause disease, it remains to speak of the operation of moral causes in inducing insanity, on which Dr. Wilbur lays great stress. I think

he has herein misapprehended the position taken by Dr. Gray. I do not understand the latter to affirm that moral causes have no agency in the production of insanity, but rather that they cause insanity only by causing disease of the brain, and that their agency is not so important as has been supposed. He says, page 11:

"While experience shows that the morbid conditions of organs and tissues more frequently act on the brain than the converse, and thus disease of special organs, and general ill health from lowered vitality, precede and become the cause of the morbid state of the brain, ultimating in insanity; still there are cases where the general ill health and the insanity are due to an overworked brain, or the anxiety and prolonged tension and sleeplessness which are often the result of grief and pecuniary losses. Even here, however, the cause is physical, because insanity comes on only as a result of defective nutrition in the tissues, those of the brain included; the sleeplessness and deprivation of rest acting powerfully, not only against appetite and the simple ingestion of food, but also by wearying the nerve-tissues, and preventing ultimate cell nutrition. Thus some persons fail suddenly and rapidly, and die unexpectedly. We say these die of exhaustion. But they are not always emaciated, and thus exhausted. The brain gives way, fails in vital energy, and death ensues. Here the morbid action is not in the nature of shock,—of sudden arrest of heart-action by a sudden and powerful impression on the brain,—but of tension and wearing effort, steadily and powerfully depressing the vital energy."

The sequence of events is in this wise. A severe and overwhelming affliction falls upon some person previously sound in mind and body. At once the whole organism is disturbed, the mouth becomes dry and pasty, digestion ceases or is imperfect, the bowels are constipated or relaxed, the action of the heart is tumultuous, the eyes are suffused, and the patient has pain or sense of fullness in the head, with sleeplessness suggesting the intense molecular actions corresponding to the emotional excitement. If this state is prolonged, the

patient continuing to suffer, his health fails, and in time he may even die of it, remaining perfectly sane. If, however, from some hereditary or other predisposition together with the loss of vitality in the brain caused by the general disturbance, this latter organ becomes diseased, he then is insane. His insanity is then said to arise from a moral cause, and to a certain extent this is true; but it is not till the brain is involved that he is insane, and the occurrence of this brain disease depends not on the degree of mental excitement only, but on other conditions of which I will speak presently.

This may be illustrated by what occurs in other organs. An indigestible meal causes the usual symptoms of gastric irritation, which last till the stomach has got rid of the disturbing cause, and then all the symptoms cease, and the patient is again in health. But if this occurs repeatedly, the stomach becomes changed in structure, and the symptoms persist after the cause has ceased to operate. This persistent disease of the stomach is analogous to the cerebral disease caused by mental excitement, and which is permanent after the moral cause has ceased to exist; for though a removal of the moral cause relieves the distress of mind which precedes insanity, yet, when this latter condition has once been induced, such removal is of little avail.

A person engaged in speculation finds himself embarrassed, and has reason to think that he is reduced to poverty and ruin. This produces great distress of mind; but if his affairs turn out better than he expected so that he finds his fears were groundless, his anxiety is relieved, and his mind and body are again well. If, however, this mental condition had once induced such cerebral disease as to render him insane, an improvement in his affairs has no influence in restoring him to sanity. The reason is that the physical disease once

established runs its course in spite of the cessation of the moral cause.*

The difference between Dr. Gray and Dr. Wilbur is this: The former as we have seen does not deny the agency of moral causes in producing insanity, but maintains that such causes first induce disease of the brain or of the system generally, and ultimately of the brain, and that when such disease exists the mental operations are perverted or disordered, the patient is insane. Dr. Wilbur maintains that moral causes induce a change in the immaterial entity mind, by which independently of any cerebral disease, its actions are disordered and insanity exists.

If with Dr. Wilbur we regard the brain as only "the organ through which sensational basis of thought" is received, leaving all emotional and intellectual processes independent of the brain, then his view of the operation of moral causes is sufficiently plausible. On the other hand, if we adopt the physiological views advocated by Dr. Gray, and which are sustained by experimental and comparative physiology, holding that no emotional or intellectual act goes on without a cerebral movement, the dependence of insanity on physical disease follows as a natural consequence.

We now come to another point on which the Doctors differ, and that is in relation to the importance of moral causes in the production of insanity. Dr. Wilbur holds them to be primary and most frequent. Dr. Gray considers them secondary and comparatively unimportant.

* And this presents a fair illustration of the inefficacy of some forms of moral treatment of insanity. You may explain to this man when insane, that his apprehensions had been erroneous, that his affairs are in fact prosperous, and all this will avail nothing to his recovery. Only when the physical injury has been repaired by time and treatment will sanity return.

Pathologists have admitted a certain class of diseases, in which are included gout, scrofula, tuberculosis, cancer, insanity and others, which make their appearance at certain periods of life and which depend for their production, not on external conditions, but on certain innate peculiarities of constitution. If we would look for their cause, we must go back to the germ at the moment of fecundation, or even to conditions existing in the parents. This cause is of the same nature as that which determines the conformation of the body, the color of the hair, or the characteristic, intellectual, or moral peculiarities. These are called diseases of development.

Accordingly, we find that a person born of gouty parents, begins at a certain period of life to present symptoms of gout, coming on without any external cause, or if some cause favoring its production is present, it is plainly secondary—no modification of external conditions will altogether prevent the occurrence of the disease in one constitutionally subject to it, nor will any possible external conditions produce it in one not thus disposed.

Yet, from the common tendency to look for direct and palpable causes, the appearance of these diseases is commonly ascribed to accidental causes. A paroxysm of gout is ascribed to luxurious living, tubercular phthisis to exposure to cold, cancer to the inflammation following some bruise. In one sense these are real causes; but it ought to be understood that they would not produce the disease if the internal conditions were not previously present, and that the presence of these internal conditions would in many instances have produced the disease without the concurrence of those external causes.

Insanity is a disease of this class, and often appears

he has herein misapprehended the position taken by Dr. Gray. I do not understand the latter to affirm that moral causes have no agency in the production of insanity, but rather that they cause insanity only by causing disease of the brain, and that their agency is not so important as has been supposed. He says, page 11:

"While experience shows that the morbid conditions of organs and tissues more frequently act on the brain than the converse, and thus disease of special organs, and general ill health from lowered vitality, precede and become the cause of the morbid state of the brain, ultimating in insanity; still there are cases where the general ill health and the insanity are due to an overworked brain, or the anxiety and prolonged tension and sleeplessness which are often the result of grief and pecuniary losses. Even here, however, the cause is physical, because insanity comes on only as a result of defective nutrition in the tissues, those of the brain included; the sleeplessness and deprivation of rest acting powerfully, not only against appetite and the simple ingestion of food, but also by wearying the nerve-tissues, and preventing ultimate cell nutrition. Thus some persons fail suddenly and rapidly, and die unexpectedly. We say these die of exhaustion. But they are not always emaciated, and thus exhausted. The brain gives way, fails in vital energy, and death ensues. Here the morbid action is not in the nature of shock,—of sudden arrest of heart-action by a sudden and powerful impression on the brain,—but of tension and wearing effort, steadily and powerfully depressing the vital energy."

The sequence of events is in this wise. A severe and overwhelming affliction falls upon some person previously sound in mind and body. At once the whole organism is disturbed, the mouth becomes dry and pasty, digestion ceases or is imperfect, the bowels are constipated or relaxed, the action of the heart is tumultuous, the eyes are suffused, and the patient has pain or sense of fullness in the head, with sleeplessness suggesting the intense molecular actions corresponding to the emotional excitement. If this state is prolonged, the

patient continuing to suffer, his health fails, and in time he may even die of it, remaining perfectly sane. If, however, from some hereditary or other predisposition together with the loss of vitality in the brain caused by the general disturbance, this latter organ becomes diseased, he then is insane. His insanity is then said to arise from a moral cause, and to a certain extent this is true; but it is not till the brain is involved that he is insane, and the occurrence of this brain disease depends not on the degree of mental excitement only, but on other conditions of which I will speak presently.

This may be illustrated by what occurs in other organs. An indigestible meal causes the usual symptoms of gastric irritation, which last till the stomach has got rid of the disturbing cause, and then all the symptoms cease, and the patient is again in health. But if this occurs repeatedly, the stomach becomes changed in structure, and the symptoms persist after the cause has ceased to operate. This persistent disease of the stomach is analogous to the cerebral disease caused by mental excitement, and which is permanent after the moral cause has ceased to exist; for though a removal of the moral cause relieves the distress of mind which precedes insanity, yet, when this latter condition has once been induced, such removal is of little avail.

A person engaged in speculation finds himself embarrassed, and has reason to think that he is reduced to poverty and ruin. This produces great distress of mind; but if his affairs turn out better than he expected so that he finds his fears were groundless, his anxiety is relieved, and his mind and body are again well. If, however, this mental condition had once induced such cerebral disease as to render him insane, an improvement in his affairs has no influence in restoring him to sanity. The reason is that the physical disease once

without any apparent cause. A person not exposed to any great anxieties or afflictions, whose affairs are prosperous, and whose general health has been good, begins to complain of general bad health, and soon after exhibits mental peculiarities which at first do not attract much attention. His family and friends are surprised and grieved at his conduct, but do not suspect the real character of the disease, which may continue in this stage for some time before it assumes the form of manifest insanity.

Beginning thus without any apparent cause, it after a time creates an apparent cause for itself, leading an inexperienced observer into error. I will illustrate what I mean by a typical example.

A cashier of a bank who had for years conducted his own affairs and those of the bank prudently and honestly, began to plunge into hazardous and desperate speculations, and in a short time brought himself and his bank to pecuniary ruin. All this, of course, brought on him disgrace and embarrassment, and after a time he began to exhibit manifest symptoms of mental derangement. He was sent to an asylum at which he died of general paresis.

In this case, the insanity was attributed by his friends to the mortification and distress caused by his disastrous operations, when in reality it was the cause and not the effect of these operations. Exaggerated notions of wealth, and an impulse to reckless speculations are symptoms of the early stage of this disease, which originated in an internal condition without external cause, physical or moral, and which gave rise to an apparent cause. A careless observer might have set this down as a case of insanity depending on a moral cause, distress, occasioned by loss of property and character.

This explains the case of many a bankrupt who has ended his life in an asylum, and of many a suicide who after losing property and character has put an end to his life before his insanity had been recognized. In many of the cases of insanity thus attributed to moral causes, it will be found on careful examination, that those supposed moral causes are themselves the effect of the insanity.

When some great excitement, political, religious, or speculative, pervades a community, a certain number of persons become insane on the subject of the excitement, and the insanity is then said to depend on this moral cause. The true sequence of events is this.

A religious revival, as it is called, exists in a certain community; meetings are held and frequented by persons interested in the movement, and the excitement of all increases the excitement of each one; discourses presenting terrific pictures of sin and its consequences are delivered, prayers are offered, cries are uttered driving this excitement to frenzy. This state of things continues for some days or weeks, and then subsides. The results are, that a large part of those who were the subjects of this excitement go back to their ordinary business forgetting all about it,—no trace has been left in their minds. A certain number calm down into a quiet religious life, and a few become insane. The latter are said to become insane because of religious excitement, when in truth they were just ready to become insane, and the prevailing excitement only started the disease and gave direction to it. Had a political revolution broken out at the time, it would probably have affected the same subjects, and given a different direction to their insane ideas.

In this way great excitements pass over a community, gathering up all the insane subjects, or those in whom

the insanity is just ready to break out; just as a high wind, passing over a forest, blows down all the rotten trees just ready to fall, and which in a short time would have fallen without it.

We may call these accidental external conditions, causes of insanity, if we will, just as we may call exposure to cold the cause of consumption, or a bruise of the breast the cause of cancer; but if we make this statement without explanation or qualification, it leads to unsound notions of the etiology and pathology of insanity. These are causes, as the pulling of the trigger is the cause of the discharge of the gun. It is indeed a cause, but what a number of conditions must exist in order to render this cause operative. These conditions are of more importance in explaining the explosion, than the slight cause which set them in movement; and so, it is of more importance to understand the preliminary physical condition which renders insanity possible, than the accidental cause which gives activity to this condition. The illustration here used fails in this, however, that while the gun would never have been discharged if no one had pulled the trigger, the man, having in himself the internal conditions of insanity, is exposed in ordinary life to so many exciting causes, that he could scarcely expect to escape for any length of time.

Shall we then say that men become insane by a sort of predestination, and that it is of no avail to avoid what are called moral causes? Most assuredly not. One disposed to tubercular disease, may, by choice of climate, nourishment, and other external conditions, escape the development of the disease, and live to an old age; and so, one who, from inheritance or other causes, has all the internal conditions of insanity, may, by a proper regimen and intellectual and moral discipline, escape an

outbreak of the disease. We certainly would not expose such a one to the excitement of Wall street, or the violent agitations of politics. This shows how unimportant is the part played by moral causes in the production of insanity.

It would be rash to attempt to answer positively the question whether a predisposition must always exist in order to give efficacy to the exciting causes of insanity. Some analogies presented by other diseases of that class, would point to an affirmative answer. We know that some become insane from very slight exciting causes, or even from no apparent cause, while others go through the most overwhelming afflictions of body and mind for many years without becoming insane, so that it would seem that some are incapable of becoming insane under any circumstances, and some have no chance of escaping it. Between these two classes are those who may escape by proper care, and these are the subjects for the skill of the psychological hygienist.

What has been said in regard to moral causes of insanity prepares us to appreciate the importance of what is called its moral treatment. Dr. Wilbur dwells on this as one of the points in which he differs from those who maintain that insanity is a physical disease, though a little examination will show that the difference is not such as he suspects. A judicious physician does not neglect moral influences in the treatment of any disease, and certainly they are not of less importance in mental derangement depending on cerebral lesion than in other forms of disease. No one disputes the good influence of a placid and hopeful condition of mind in a case of pneumonia or rheumatism or any other purely physical disease. Firmness and gentleness on the part of attendants, avoidance of all violence and excitement, such surroundings as may induce in the patient a cheerful and

placid temper, together with a healthy exercise of the moral and intellectual faculties are remedial and hygienic measures, which no wise physician would question or discard in the management of insanity, however much he might be convinced of the physical character of the disease. If we admit that insane thoughts and acts have a tendency to aggravate and extend the cerebral lesion, it is obvious that an important element of treatment is to allay the violence of the mental operations by soothing moral treatment. Indeed, it is worthy of remark, that the adoption of such treatment dates from the time that the insane began to be considered as subjects of physical disease and not victims of demoniacal possessions.

So far, then, there can be no dispute as to the necessity of moral treatment; it accords quite as well with the pathological views of Dr. Gray as with the views of Dr. Wilbur. But, if we attempt to operate directly on the mind of the insane by moral considerations we shall be greatly disappointed in the results. The importance of moral treatment lies in avoiding what is hurtful, but it is of little influence as a direct curative agent. How vain is the attempt to reason with the insane on the subject of their delusions, or to remove the gloom and despondency of melancholics by cheerful or diverting conversation is well understood.

This may be illustrated by what occurs in the experience and consciousness of most persons, in a condition, not of insanity, but presenting similar mental and physical elements.

Most persons know what it is to be in low spirits without any external cause to justify or explain the feeling. In this state of miserable despondency everything looks gloomy and threatening. The attempt of friends to cheer the subject of this sadness and appre-

hension, by showing how unreasonable it is, or by diversions and cheerful conversation, only excites a feeling of vexation and anger. Now, under such circumstances, the operation of a cholagogue purgative will often restore the sufferer at once to his accustomed humor and to moral and intellectual activity. The mental disturbance depended on the circulation through the brain of blood imperfectly depurated, and ceases at once when this fluid has been restored to its normal condition. All moral curative treatment failed while the physical cause continued, and became unneccessary when this cause was removed. This condition differs from melancholia in being of a slight and transient character, while the latter depends on a more deeply rooted and permanent physical lesion. Melancholics who have recovered, describe the passing away of their delusions and sadness as being like the dispersion of a cloud which had been hanging over them.

In this paper the attempt has been made to present fairly the spirit and matter of the views and arguments on both sides, without introducing extracts from the papers which have served as the text. Such extracts would have extended this paper to an unreasonable length, and were unnecessary for the reason that the papers under consideration are very generally in the hands of the readers of this JOURNAL. T. H.

BIBLIOGRAPHICAL.

REVIEW OF ASYLUM REPORTS FOR 1871.

25. MASSACHUSETTS. *Report of the Taunton Lunatic Hospital:* 1871. Dr. W. W. GODDING.

There were remaining at date of last report 382 patients. Admitted since, 380. Total, 762. Discharged recovered, 113. Improved, 135. Unimproved, 89. Died, 43. Total, 380. Remaining under treatment, 382.

Two subjects of great practical importance have received attention in this report. We refer to the care of the criminal or convict insane, and inebriates. A few States have made separate provision for one or both of these classes, while others have the question still to answer, what shall be done with them? Several of the Superintendents of insane asylums are presenting the disadvantages of attempting the care of inebriates among the ordinary insane. The picture which the Doctor draws will be recognized as a faithful one by all who have had a like experience. We quote:

A patient of this class is brought to the hospital. In a few days, the stimulus being withdrawn, the reason clears; sleep and food restore the exhausted nervous system, and the man says he is well. His delusions, if any existed, are gone; his pulse is normal; his sleep is good; he reasons well on any topic,—on none clearer than on his unfortunate habit. It is true that repeated attacks sometimes leave the mind weak, but I am considering the ordinary case. Intellectually he is well, and you can detect only one thing lacking,—his moral sense; that, in confirmed cases, seems to have burnt out early. Theoretically you say the man is not well. I doubt not you can point out an undue irritability of the nerve centres, and I am not chemist enough to say that the carbon, hydrogen and oxygen that should go to the making up of the ultimate

molecules of his brain may not have there united in the proper equivalents to form alcohol; but practically he has recovered from his insanity, and in a world where there was no rum he would remain well. So you can keep him or let him go. If you let him go, the chances are that he will drink again and be back in a month. If you keep him, which after one or two trials is perhaps the best thing that can be done, you will probably regret it. In a hospital, where labor can not be compulsory, he never elects to do anything; a life of dissipation predisposes to a life of idleness, but to him the idleness without the dissipation is fearful. His freedom from obvious insanity seems to entitle him to a place among the most intelligent and comfortable patients; he takes your best as being his right, and then abuses it; he poisons the minds over which he has an influence, creating disaffection towards the hospital that detains him. Some slight advantage in education causes him to look down with contempt upon the poor lunatics, as he styles them; he says that his case is not like theirs, that the hospital is no place for him. And I think he is right. It will be said that the absence of moral sense, to which allusion has been made, is the very evidence on which the man should be kept in the hospital. If disposed to argue the point, I should ask, how is it with the man addicted to profanity, whose oaths at last pour from his lips with hardly a consciousness of the words he utters,—must we call his absence of moral sense, moral insanity? Criminal indulgence of all kinds at last passes the bounds of self-control, but we very properly hold the individual responsible for the course by which the end was attained. Exactly what view we may individually take of his case does not matter; sane or insane, the confirmed inebriate should have special provision made for him by the laws.

A law upon the statute book of the State calls for the erection of an asylum for the convict insane.

This is a wise provision, but as it stands without enforcement, affords no aid to the various asylums of the State. We hope the superintendents of institutions and others occupying positions of influence who may be able to create a public opinion upon the subject, will not let this matter rest till all the convict insane are fully and properly cared for in an institution erected according to the act referred to.

Upon the subject of labor we quote:

To the overtasked brain, nothing is more health-giving than the contact of mother earth; our patients go out and walk over, and work in, and lie down on it. Is their work profitable? Well, when they weed in the garden they are liable to thin out the vegtables surprisingly; when they hoe, I suppose they bury some tender plants beyond the hope of a resurrection; but somehow, out in the sunshine, the cheek browns and reddens; over his work the man grows calm; out of all this the tangled web of the intellect clears itself again, so that when a patient begins to work, we begin to hope he will get well. Nor would it be right to convey the idea that our farming is a failure; if our vegetables are a little late, they are none the less acceptable when they come. We get out of the land more than we put in it; where we have removed the unsightly rock this year, the grass will grow green the next; the rough places, once made smooth, remain so; open up the long vistas of the woods, and their green aisles will always gladden you, for the years, as they steal away the charm from everything else, make the trees only more beautiful.

Improvements in the internal arrangements of the house and on the farm and grounds are going forward, which add to the beauty of the asylum, and increase the comfort and happiness of its inmates.

26. Connecticut. *Sixth Annual Report of the Connecticut Hospital for the Insane.* Dr. A. M. Shew.

There were remaining at date of last report 237 patients. Admitted since, 92. Total, 329. Discharged recovered, 17. Improved, 11. Unimproved, 24. Died, 15. Total, 67. Remaining under treatment, 262.

The same question as regards the treatment of the convict insane is now under consideration in this State. During the past year, eight of this class have been sent to the asylum. The same difficulties of preventing their escape, and the moral effects of their association with other patients is noticed here as elsewhere.

Fortunately, the Doctor is able to propose a ready solution of the question as to what shall be done with

them. He proposes at an expense of $5 000, to fit up a stone building formerly used as a shop, in a manner every way appropriate for their care and safe custody. During the year work has been carried forward upon the new wing, and by January, 1873, it is thought accommodation would be furnished for 125 more women patients. An appropriation to erect a like wing for the men is strongly urged. Dr. Shew is laboring under the disadvantage of having inherited a large mass of chronic insanity.

At this date, out of 262 patients in the asylum, 242 are of the chronic class, and of only 20 can the idea of restoration be hopefully entertained. Of the water supply of the Institution, the Doctor speaks in terms expressing great satisfaction. "The quality of the water is unexceptionable, and in ordinary seasons of sufficient quantity to supply several institutions of this size."

The special Pathologist, Dr. Seguin has continued his labor, and this year presents a very complete report of a case of Paresis. This includes the history of the case, before and after admission, a very thorough examination of the person, with the diagnostic symptoms of the disease, the autopsy, and finally a very minute microscopical examination. We commend the thoroughness of this report.

27. New York. *Fifth Annual Report of the Hudson River State Hospital:* 1871. Dr. J. M. Cleaveland.

The labor of construction has been continued through the year, and three sections are now opened for the care of patients. The fourth section on the men's side it is hoped, will be completed during the current year. In October last, the portion already completed was opened for the reception of patients. The superintendent re-

ports on the 30th of November that seven patients had been admitted. The managers report on the 11th of March, that there are 60 patients already received, and that the present capacity will soon be reached. Much of the report is occupied with details of building operations. The building of the reservoir and the putting in the power for raising the water, and laying pipes for conducting it from the river, occupied much attention during the past year. The Institution may well be envied by others less favored in regard to water supply; this is absolutely limitless. We are glad to be able to chronicle the opening of the Hudson River State Hospital for the Insane under such favorable auspices.

28. New York. *Report of the State Lunatic Asylum for Insane Criminals:* 1871. Dr. James W. Wilkie.

There were remaining at date of last report 60 patients. Admitted since, 30. Total, 90. Discharged recovered, 6. Improved, 5. Unimproved, 3. Died, 2. Total, 16. Remaining, 74.

Dr. Wilkie reports the Asylum as being much crowded from the reception of patients sent under the law authorizing the transfer of insane criminals of both sexes, from the State institutions, or directly from the various counties upon the order of the Court. He has been obliged to vacate a whole ward for the use of five women patients, and in so doing to crowd seventy men patients into wards with accommodation for only forty-eight. To meet the demands upon the Institution, he calls for an appropriation of $30,000 to enlarge the capacity of the Asylum. Of twenty patients received during the year from the prisons, nine were of unsound mind when they were admitted to prison. He remarks: "It would appear from the foregoing statement that the practice of sentencing men, innocent because not

accountable by reason of insanity, to our State prisons, is largely on the increase, and calls loudly for a remedy." Much has been done in making needed repairs and improvements, and the appropriation of $1,000 made last year has been used with economy and benefit to the Asylum.

29. PENNSYLVANIA. *Fifty-fifth Annual Report of the Asylum for the Relief of Persons Deprived of the Use of their Reason:* 1872. Dr. J. H. WORTHINGTON.

There were in the Asylum at date of last report 62 patients. Admitted since, 24. Total, 86. Discharged recovered, 7. Improved, 10. Unimproved, 7. Died, 5. Total, 29. Remaining, 57.

During the year great changes and improvements have been made. A new Mansard roof has been placed over the whole building, giving eight additional rooms for employes, and new wards have been built to accommodate ten more patients, five of either sex. The windows have been cut down and new ones made in the rear walls of the buildings, thus greatly increasing the amount of light and cheerfulness of the wards. The Institution now compares favorably with others in the possession of all modern conveniences for the comfort and care of patients.

30. INDIANA. *Report of the Indiana Hospital for Insane:* 1871. Dr. ORPHEUS EVERTS.

There were at date of last report 475 patients. Admitted since, 338. Total, 813. Discharged recovered, 176. Improved, 30. Unimproved, 90. Died, 40. Total, 336. Remaining under treatment, 477.

The demands upon the Institution for admission have been far in excess of the capacity of the house. One hundred and thirteen, made officially, were refused. The

ninety cases discharged as unimproved were chronic cases sent away to make room for acute cases. The Institution has been crippled from the failure of the Legislature to make a special appropriation for improvements and repairs. However, a basement ward has been fitted up and made comfortable for the use of patients.

31. KENTUCKY. *Report of the Eastern Lunatic Asylum:* 1871. Dr. JOHN W. WHITNEY.

There were at date of last report 525 patients. Admitted since, 142. Total, 667. Discharged recovered, 61. Removed, 24. Died, 45. Eloped, 1. Total, 737. Remaining, 536.

Dr. Whitney notices the subject of the proper care of the criminal insane, and recommends a separate addition to be made to the Asylum. He calls the attention of the Legislature to the project of a law in regard to this class adopted by the Association of Superintendents in 1868, and thinks its passage would prove beneficial. During the year the portions of the Institution destroyed by fire in September, 1870, have been rebuilt. The managers urge the increase of officers' salaries, the Superintendent's to $3,000, First Assistant's to $2,000, and Steward's to $1,000.

32. MISSOURI. *Report of the St. Louis County Insane Asylum:* 1872. Dr. CHARLES W. STEVENS.

There were at date of last report 253 patients. Admitted since, 112. Total, 365. Discharged recovered, 16. Improved, 16. Unimproved, 22. Died, 12. Total, 66. Remaining, 299.

The methods of heating by steam, and lighting by gasoline, after continued use receive the Doctor's commendation. During the year much suffering has been experienced from the want of a water supply. For two months of the last winter a heavy expense was incur-

red for transporting water for the boilers and laundry from the nearest fire plug of the city, a distance of three miles. A connection will soon be made with a new city reservoir, which will obviate further trouble and anxiety. Applications for admission far exceed the capacity of the Asylum, and extensions to the building are urged.

The establishment of a "Board of Commissioners of Public Charities" is favorably commented upon. "If then, the gentlemen composing the Board conceive the true spirit of their official duties, their presence in all our asylums, hospitals and alms-houses will be hailed as ominous of good."

Report of the Institution for Feeble-Minded Youth: Barre, Mass. 1872. Dr. GEORGE BROWN.

There are about sixty children cared for in the Institution; some are pupils, some custodials, and others patients. The Doctor says: "Our first aim is the highest physical health attainable by each subject of our care." "With fresh air, sun-light, and nutritious food, we seek to build up the muscles, quicken the sluggish circulation, and furnish to the blood the red corpuscles so often lacking as to their proper quantity in these puny delicate children."

Upon the subject of epilepsy, Dr. Brown comments at some length. "For medical remedies in epilepsy, we have found bromide of potassium, in its various combinations more reliable in controlling the attacks than anything else. It is a great point gained to hold such a disease in check, preventing access of strength and increase as to frequency, even when a permanent cure may not be predicted."

From Trousseau he quotes: "I can not repeat to you too often that patience on the part alike of Doctor and

patient is the capital condition of success. A whole year is sometimes scarcely enough to make us acquainted with the influence of belladonna, and in the second year some amendment should appear: we should persevere for two, three, or four years, according to the rules which I have laid down, and so as to bring the nervous system under the influence of the remedy."

Seventh Annual Report of the Illinois Institution for Feeble-Minded Children: Jacksonville, 1872. Dr. C. T. WILBUR.

The success attending the operation of this Institution led the Legislature, after the close of its sixth year of experimental labor, to incorporate it as a State institution.

During the year 86 pupils have been under instruction; 30 have been received and 15 removed. There are 71 pupils now present. We quote from the Doctor's reprint some remarks upon the object and aim of the Institution.

Many are not familiar with the design of the Institution for Feeble-Minded Children. The object and aim of an institution for this class of children is: the improvement of the general health, by physical training, exercise, bathing and all other suitable appliances, with such use of medicines as may be beneficial; the awakening, regulation and development of the mental powers, by those means peculiarly adapted to this class, which have already been found so effectual in similar institutions; the employment of those educational resources which have been systematically developed in similar institutions, with as much modification and extension as may be necessary to meet the peculiarities of pupils; in the cases of the best class of pupils, the providing of some suitable occupation, giving healthy employment, at once agreeable and profitable, to all their powers, especially keeping in view such occupations as may fit the pupils for future usefulness and intercourse with society. Among the first lessons are those designed to teach them to take care of themselves, as far as possible, in all personal matters. As a general rule, judicious physical exercise is the basis of the whole course of instruction.

The exercises of the school room, which are strictly educational, are based upon no new principles of education—for many of the principles adopted in any judicious course of instruction for ordinary children will be equally applicable to our pupils—but consist of novel applications of those principles to meet the peculiar mental conditions of the subject.

The method of instruction is peculiar in this: that it commences with exercises adapted to the very lowest degree of intelligence, and proceeds, by a very gradually ascending scale, up to the point where ordinary systems of education begin. These exercises commence at the lowest possible point that can well be conceived of—the exciting in an inert mind, incapable of self-determination, in response to suitably applied stimuli, the feeblest voluntary action—and end with those that constitute the lessons of an ordinary elementary school. To each class of pupils, as far as they can be classified, a series of intellectual exercises are adapted, and each series of exercises is so graduated to the next series above, that the subject of them may be easily led from one to the other.

There are now ten institutions in the United States for this class of children.

The largest is at Columbus, Ohio. It is a State institution, and will accommodate 350 inmates.

The Pennsylvania Institution is located at Media, and has now 186 inmates.

There are two in New York: the New York State Asylum for Idiots, at Syracuse, has 180 pupils, and the New York City Asylum, located on Randall's Island, has 147 inmates, of which number 106 attend school.

In Massachusetts there are three institutions. One at South Barton, supported by the State, has 106 inmates; one at Barre, a private asylum, has 75 inmates, and one at Fayville—(a private school, recently put in operation) number of pupils unknown.

In Connecticut there is an asylum located at Lakeville which has 53 pupils.

Kentucky has an institution located at Frankfort, with 87 pupils.

The Illinois Institution has 71 pupils. The total number of imbecile children under instruction in institutions, public and private, in the United States, is probably about 1,000.

Annual Report of the Connecticut School for Imbeciles, at Lakeville, Conn.: 1872. Dr. H. M. KNIGHT.

The number of pupils connected with the school during the year was 55; the present number is 48.

Dr. Knight has in this report treated upon the subject of causation. His opinion inclines to that of the more recent investigations, that consanguinity is not as has been supposed, the greatest cause of idiocy or imbecility, but that the tables to which access has been had prove the contrary.

He quotes from Bemiss, of Louisville, from Liebreich, of Berlin, Trousseau, Boudin, and Voisin. We see no reference to the labors of Drs. Newman and Allen, who have so recently and fully investigated the effects of consanguinity in marriage.

FOREIGN REPORTS.

Twenty-fourth Annual Report of the Somerset County Pauper Lunatic Asylum: 1871. Dr. C. W. CARTER MADDEN-MEDLICOTT.

There were in the Asylum at date of last report, 628 patients. Admitted since, 160. Total, 788. Discharged recovered, 120. Died, 66. Condition not stated, 79. Total, 265.

The Doctor sustains the theory of the physical causation of insanity, and says, "that in the medical treatment of the cases that have come under observation the past year, care has been taken to form so correct an examination of each individual case, that 'diagnosis,' should form the safest index to the therapeutical means adopted. . . . . That medical treatment has been directed to meet the most important morbid symptoms in question."

Report of the Richmond District Lunatic Asylum, Dublin: 1871. Joseph Lalor.

There were at date of last report, 986 patients. Admitted since, 357. Total, 1,343. Discharged recovered, 168. Improved, 62. Unimproved, 5. Deaths, 114. Escapes, 1. Total, 350. Remaining, 993.

This Institution was established in 1830, for 257 patients. It now has 1,040 beds, of which 993 are occupied at the present time; the district has been somewhat diminished in population. This would apparently give good reason for supposing that insanity was largely on the increase. The Doctor is, however, disposed to attribute this increase to the desire of the public and friends of lunatics to place them in asylums. The statistical matter is very full, embracing 51 tables, and furnishing information upon a great variety of topics.

Report of the County Lunatic Asylum at Prestwich: 1871. Dr. J. Holland.

There were at date of last report 1,020 patients. Admitted since, 220. Total, 1,271. Discharged recovered, 141. Improved, 24. Unimproved, 27. Died, 75. Total, 267. Remaining, 1,004.

Dr. Holland retires from the superintendency of this Asylum after a service of 22 years, and assumes a like position in the County Asylum at Whittingham. In parting with him the committee express a very high appreciation of his valuable services.

Report of the York Lunatic Asylum: 1871. Dr. Frederick Needham.

There were at date of last report 180 patients. Admitted since, 38. Total, 218. Discharged recovered, 14. Relieved, 3. Not improved, 5. Died, 10. Total, 32. Remaining, 186.

We quote from the report the following incident:

A curious and painful accident occurred to one of the male patients, which suggests reflections interesting to those who are concerned in the management of asylums and the care of the insane. I was standing at the door of one of the airing courts, when I observed a male patient, who was taking exercise, suddenly fall in an epileptic fit, face downwards, upon the grass. He uttered no cry, and gave no other warning of the attack. He was, of course, at once attended to, and, with the exception of a bleeding nose and mouth, seemed to have sustained no injury. In half an hour the attendant asked me to visit him again, as the bleeding had not ceased, and, on examination, I found that the lower jaw was fractured in two places. The patient ultimately made an excellent recovery. Now, suppose that this accident had occurred in a large court, thickly planted, or that from any cause the patient's fall had been overlooked for a few moments, and death ensued from suffocation, what an extreme ugly combination of events would have presented itself to a coroner's jury—sufficient, indeed, to warrant them in returning a verdict of death from violence, to wit, a murderous blow on the face.

Such accidents as this demonstrate two facts of much importance to all persons connected with asylum management. Firstly, that the superintendent of an asylum is at all times surrounded by the possibility of temporary loss of credit from circumstances over which he can not exercise an atom of control; and that, therefore, although he can not be absolved from legitimate responsibility, he is entitled to a just and discriminating criticism; and, secondly, that attendants upon the insane, while they are neither much better nor much worse than other people, may be easily credited with crimes which they do not commit, and suffer unjustly for no fault of their own.

During the progress of the above case, it was found impossible to keep the patient from tearing off the bandages, and his hands were, therefore, restrained until the bones were united.

Sixth Annual Report of the City of London Lunatic Asylum: 1871. Dr. Octavius Jepson.

There were at date of last report 265 patients. Admitted since, 82. Total, 347. Discharged recovered, 22. Relieved, 6. Unimproved, 22. Not insane, 1. Died, 21. Total, 72. Remaining, 275.

Tenth Annual Report of the Cumberland and Westmoreland Lunatic Asylum: 1871. Dr. T. S. Clouston.

There were at date of last report 401 patients. Admitted since, 130. Total, 531. Discharged, 86. Died, 41. Total, 126. Remaining, 405.

Sixty-three patients were discharged recovered, which is 48 1-2 per cent. on the admissions. Of these, three-fourths, or forty-seven had been placed under treatment within the first month of their insanity. The practice of allowing patients to be removed for a month on trial is growing in favor. The most obvious disadvantage beside the clerical labor and the complication of the accounts, is the fact that the individual is considered a patient of the asylum, and that a certain amount of responsibility for his action attaches itself to the officers of the institution, who virtually retain no power over him while the term of probation continues. "The medical treatment of the patients occupies an exceedingly important place in the minds of the medical officers; they endeavor to realize the fact at all times, that every patient who is sent here is an individual who labors under a disease which must be treated as a special and separate thing in each person, and, if possible, treated for its amelioration and cure."

Report of the Provincial Lunatic Asylum, Fredericton, N. B.: 1871. Dr. John Waddell.

There were at date of last report 248 patients. Admitted since, 104. Total, 352. Discharged recovered, 47. Improved, 25. Unimproved, 2. Died, 32. Total, 106. Remaining, 246.

The Institution is already so much overcrowded that the Doctor writes this note of warning, that "the time may not be far distant when, owing to overcrowding, typhoid fever may break out and decimate our num-

bers." Upon the subject of further provision, the action of the Association of Superintendents is quoted, and the experience of Dr. Roy of Quebec, all of which is a protest against separate provision for the chronic insane.

REVIEWS.

The Treatment of Venereal Diseases—A Monograph on the Method pursued in the Vienna Hospital. M. H. HENRY, M. D., Surgeon to the New York Dispensary, Department of Venereal and Skin Disease, &c., &c. New York: William Wood & Co.: 1872.

This monograph is reprinted from the *American Journal of Syphilography and Dermatology*, for April, 1872. The reason for and scope of the work are best given in the Doctor's own words:

Experience has proved that the assumption that every practitioner of medicine is perfectly familiar with the therapeutics and essentials of treatment in venereal and the kindred diseases is, to say the least, a rash one. We have in this country—and it is a lack deeply to be regretted—no hospital in which this specialty may be studied on a large scale. The general directions given in the treatises in our language regarding the application of thereapeutics are, moreover, meagre, since they fail to cover the *details* which form so considerable a part of the practitioner's duty.

The following pages are a contribution towards filling this void, presenting, as they do, the results of practice in the foremost hospital of Continental Europe, namely, the Vienna Hospital, under the direction of Professor Von Sigmund.

It is to this celebrated institution, where German acumen, patient study, and faithful recording have been so admirably exemplified, that we owe the most valuable advances made in venereal pathology and therapeutics during the last twenty years. This fact will be a sufficient justification of the very minute directions, and the long list of formula given in subsequent pages.

Much attention is paid to the proper hygienic measures to be adopted in the treatment of this form of dis-

ease. Cleanliness is particularly enforced in regard to the person, the diseased part, and all the appliances and dressings used in the hospital. Full and explicit directions are given in reference to the minute details which should command the attention of the medical practitioner. About two hundred of the most reliable prescriptions used in the Vienna Hospital are recorded and their points of similarity and difference pointed out. It is a valuable contribution which we commend to the profession.

Skin Diseases, their Description, Pathology, Diagnosis and Treatment. By TILBURY FOX, M. D., London, M. R. C. P., &c., &c. Edited by M. H. HENRY, M. D., Surgeon to the New York Dispensary, Department of Venereal and Skin Diseases, &c. William Wood & Co., New York: 1872.

The known ability of the author, his practical experience in the treatment of skin diseases, and the character of his previous writings upon the subject, are a guarantee that a work from his hands would be worthy the attention of the medical profession. A careful perusal of this volume confirms such an opinion.

The design of the work is fully set forth in its title. The classification of disease is new and mostly in accordance with the nomenclature proposed by the College of Physicians. This simplifies the subject and if followed by others will do away with the cumbrous and unscientific divisions which have hitherto prevailed and have been as various as the different authors who have treated it. A description of some forms of skin disease which exist, almost exclusively in certain remote localities, is a new feature of the work, and renders it of special value to those who are called upon to treat them. A large number of prescriptions which have been tried and found useful are recorded. A full glossarial index completes the book.

The American editor, Dr. Henry, in presenting it to the favor of the profession, remarks: "The book is a good one; so good that I have refrained from trespassing on its pages or the patience of the reader with many 'notes and additions.'" Such an indorsement from so high an authority carries much weight and renders further comment unnecessary.

Lectures on Aural Catarrh, or the Commonest Forms of Deafness, and their Cure: By PETER ALLEN, M. D., Fellow of the Royal College of Surgeons, Edin., &c., &c. William Wood & Co., 27 Great Jones St., New York: 1872.

This claims to be the first separate work published in the English language upon Aural Disease, since that of Toynbee, in 1860. It does not pretend to be an exhaustive treatise upon the subject, but to embody the ideas of the author as to the *system* to be pursued in striving to advance scientific knowledge.

The design of the work is concisely stated, as a desire to help the earnest reader, by telling him *how to examine*, *what to look for*, and *where to find the disease*, in a case of Aural Catarrh.

The book has 275 pages, and is full of valuable information for the general practitioner. We find here an explanation of many conditions which are often overlooked or misinterpreted by others than those who devote themselves to the specialty of aural diseases. It is fully illustrated with cases, occurring in actual practice.

The publishers have presented it in good type and on good paper,—which will add much to the pleasure and comfort of its readers.

A Year Book of Therapeutics, Pharmacy, and Allied Sciences: Edited by HORATIO C. WOOD, Jr., M. D., Professor of Medical Botany, University of Pennsylvania, &c., &c. New York, William Wood & Co.: 1872.

This book presents a general sketch of the progress

made in these branches of medical science during the year. It is divided into five parts; viz.: Therapeutics, Materia Medica, Toxicology, Prescriptions and Formulas, and General Receipts.

The articles comprising the volume have been gleaned from various medical journals of this and foreign countries, and place, in a condensed and convenient form for the busy practitioner, a large amount of valuable information. Special attention has been paid to collecting experience in the use of the newer remedies, and to recording physiological observations upon the action of all drugs and remedial agencies. The great advantage of this practice of the annual publication of a work of this kind, will be appreciated by those who desire to keep abreast with the discoveries and advances in this field of medical knowledge.

Like the other volumes issued from the press of W. Wood & Co., this is worthy of notice alone from the excellence of the typography and paper.

The Physiological and Therapeutical Action of the Bromide of Potassium and Bromide of Ammonium; in two parts. By Edward H. Clarke, M. D., and Robert Amory, M. D. Boston: James Campbell, 1872.

Investigation of the remedies which have been comparatively recently introduced to the profession, and have not as yet gained a fixed status in the various pharmacopeias and dispensatories, are of special value. Much remains to be learned and recorded concerning them. Theories which have been advanced of their manner of action in the system, are to be confirmed or refuted by clinical experience, the touchstone to which all remedies are to be subjected before their proper position can be assigned them. As aiding in this useful and necessary labor, the volume on the bromides has its place.

Dr. Amory first presented a paper upon the bromides in the *Transactions of the Massachusetts Medical Society.* The second edition now called for is prefaced by an article by Prof. Clarke. The experiments made confirm the effects reported by Brown-Sequard that under the influence of the bromides, "the arterial vessels alike of the periphery and the nervous centres undergo a manifest contraction, from whence there results a topical oligæmia of the encephalon and of the spinal cord, and a consequent diminution of the irritability of that organ. Prof. Clarke adds:

> It is apparent from these considerations, that the bromide of potassium, by contracting the arterioles of the brain and expelling temporarily a certain amount of blood from them, may produce wakefulness or sleep, according as the condition of the brain is one of hyperæmia or oligæmia.

This distinction in the effects of the remedy as an indication for the use of it, we consider of great importance. Without attention to the state of cerebral circulation much injury may be done; instances in which this has happened will no doubt occur to our readers.

The action of bromide in single, continued and toxic doses are pointed out, as also the phenomena which they exhibit. These are divided into the two classes: the therapeutic, and disagreeable and toxic group. The special applications of the continued dose form an interesting chapter in therapeutics. Its use in epilepsy is commended in large and long continued doses. The experience of others is largely quoted in this connection. The action and use of bromide of ammonium is substantially the same as those of potassium; it is said, however, to be more irritating to the stomach.

Dr. Amory treats the subject of Physiological action under the following propositions:

A. Bromide of potassium is absorbed readily by any portion of the healthy mucous membrane with which it is placed in contact.

B. This drug is largely and mainly eliminated with the urine; during the first day the largest portion passes out of the system, less during the second day, and so on until there is none left in the system.

C. The skin assists in the elimination of this drug from the system on the second as well as the first day.

D. The loss of reflex action is due to the determination of blood in the periphery of the nerves, and also of the central nervous system; the last occurring after the first.

E. The action of bromide of potassium on the nervous system may be explained by its action on the capillary, arterial or central circulation.

We quote some of the concluding remarks:

I consider its continued and prolonged use contra-indicated in anæmia and chlorosis. That it is a specific against epilepsy is erroneous. Such cases as proceed from anæmia of the cord, or any part of the brain, will not be ameliorated by its use. When there is a congestion, there will be benefit. Again, if the dose could be administered only when an attack is anticipated, it would be following out the indication of its physiological action.

We commend the work to those engaged in treating diseases of the nervous system, and to the profession generally.

A Treatise on Diseases of the Bones. By THOMAS M. MARKOE, M. D., Professor of Surgery in the College of Physicians and Surgeons. Surgeon New York Hospital, Surgeon of Bellevue Hospital, &c., &c. New York: D. Appleton & Co.: 1872.

This book contains the substance of the lectures delivered by Prof. Markoe, during the past twelve years, at the College of Physicians and Surgeons, of New York City. It does not claim to be an exhaustive work upon the subject of which it treats, but the author, as

he states, follows the leadings of his own studies and observations, dwelling more on those branches which he has seen and studied most.

The time given to the work has been taken from an active professional life, and this fact shows the enthusiasm and devotion of the Doctor to the subject. He acknowledges his indebtedness to various authors, from whom he has quoted, and to his professional friends.

The work is illustrated by cuts from Paget, Billroth, Heath, Erichsen, and others, and by original designs from photographs of specimens in the New York Hospital Museum. It is divided into three parts, Diseases of Bone, Tumors of Bone, and Malignant Diseases of Bone. The last part, upon Cancerous disease, is especially full and interesting, and contains many original illustrations and the results of minute microscopical examinations. It is a valuable contribution to surgical diseases, and is written in a pleasing and attractive style.

Works of Sir James Y. Simpson. Vol. III.—*Clinical Lectures on the Diseases of Women.* Edited by ALEXANDER R. SIMPSON, M. D. New York: Appleton & Co.: 1872.

The lectures included in this volume appeared in the *Medical Times and Gazette*, during the years 1859–1861, and it was the intention of the distinguished author, to have presented them to the profession in book form. This work has, however, been ably performed by other hands.

The lectures are not arranged in systematic order, but this is made up for in the fullness of the index. They are fifty in number, and embrace an almost equal variety of topics. Many of them are treated of more at length than is usual in books of like character. The general practitioner will find here many things of prac-

tical importance, for which he will look in vain elsewhere. The publishers have given the book an attractive and substantial dress.

REPORTS OF SOCIETIES AND INSTITUTIONS, AND PAMPHLETS RECEIVED.

Third Annual Report of the State Board of Health of Massachusetts: 1871.

The report is an highly interesting one, and contains several articles of merit. The first one "On Arsenic in green colors, by Dr. Frank W. Draper," is a general *resumé* of the subject of arsenical poisoning by the use of this mineral in the preparation of wall papers. It may serve to direct the attention of practitioners and the public to this possible source of danger in all cases of poisoning by arsenic. It is accompanied with samples of the paper, which contain from 5.42 to 29.32 grains to the square foot.

"The Use and Abuse of Intoxicating Drinks throughout the Globe:" by Dr. H. S. Bowdwitch. This is a strong temperance document, written in the interests of truth and science. The position assumed is, not the impracticable and untenable one of a "total abstinence" man who can see no place or use for stimulants of any kind, and affirms that alcohol is at all times and ever "a poison." The Doctor's position is thus stated, and will, we think, be sustained by the medical profession generally. "I take the following position, and I fearlessly assert that clinical experience proves, if it prove anything, that every form of stimulant now in use can be made a blessing, if used temperately and on proper occasions." "I believe that physicians do, at times, save human life by using various stimulating drinks with the utmost freedom. Moreover, I do not

believe there is a single article in the *materia medica* that in its various forms of elixirs, tinctures, extracts, &c., or when singly combined with water, is more necessary than alcohol in the treatment of disease."

But while making this appeal, as a medical man, in behalf of the proper and temperate use of spirits, and for therapeutic purposes, the Doctor gives no comfort to those who habitually use alcoholic drinks. He is a strenuous advocate of temperance, and thinks the cause will be advanced through the agencies of education and moral suasion rather than by any positive prohibitory law. "We have forgotten that it is impossible in a republic to carry out any law that is unsupported by the deeper sentiments of the people."

"Proper Provision for Insane:" by Edward Jarvis, M. D. This article is founded upon the experience of a physician, in private practice, and among a class of quiet patients who are able and willing to incur any reasonable expense for care and attendance. This is shown by the histories given, and by the acknowledgement of the Doctor. In his remarks upon asylum architecture, reference is made apparently to the same class, who are to be treated in dwellings adorned and fitted up to correspond with their own homes and surroundings, while the disturbed and maniacal are to be separated and isolated from the world in substantial prison-like structures, as he says: "Moreover, as everything should be arranged to keep in the patient's mind feelings of home as much, and to remind him of the hospital as little, as possible, these dwellings for the mild should be not only separate from, but out of sight of, the stronger and more forbidding house, which might call out their painful sympathies, or be an ever present warning to them of their liability to change for the worse, and, a standing threat that if their disease should take an unfortu-

nate turn, and they become excited, they must be removed to that place of stricter confinement."

We do not understand this dread of the use of the word hospital. The patients who seek relief from their malady are sick people, and are placed in institutions for medical treatment, and not to be boarded out, or for custodial care. And experience teaches that the more fully this idea is impressed upon the persons treated, the more heartily do they second the efforts made to benefit them; and the more thoroughly they appreciate their condition, the greater is the hope of a speedy recovery. They should rather be made to look upon the hospital as a means to accomplish so desirable an end. The pleasant names for "the strongly built and more forbidding house" "as grove house, valley house, orchard house, &c.," if employed, would not cover up or conceal the fact that they were for the residence of the noisy and disturbed, and after this became known, they would be suspected, and the more hated for the very deception employed. Care should rather be taken to remove from the wards everything that is mysterious and unpleasant or forbidding; so that, if necessary, the change from the quiet to the disturbed ward may be made without attracting the attention of the patient, or of friends, to the broad distinction of condition. This would reduce the moral effect to the minimum.

Again, the larger number of those who can enjoy such surroundings as are pictured, are either cases convalescing from acute attacks of disease, and who will soon return to their homes, or the chronic and harmless who can be retained at home. This latter class the public do not propose to retain in institutions. We should be pleased if it were possible to suggest some plan of hospital building, more economical and better

believe there is a single article in the *materia medica* that in its various forms of elixirs, tinctures, extracts, &c., or when singly combined with water, is more necessary than alcohol in the treatment of disease."

But while making this appeal, as a medical man, in behalf of the proper and temperate use of spirits, and for therapeutic purposes, the Doctor gives no comfort to those who habitually use alcoholic drinks. He is a strenuous advocate of temperance, and thinks the cause will be advanced through the agencies of education and moral suasion rather than by any positive prohibitory law. "We have forgotten that it is impossible in a republic to carry out any law that is unsupported by the deeper sentiments of the people."

"Proper Provision for Insane:" by Edward Jarvis, M. D. This article is founded upon the experience of a physician, in private practice, and among a class of quiet patients who are able and willing to incur any reasonable expense for care and attendance. This is shown by the histories given, and by the acknowledgement of the Doctor. In his remarks upon asylum architecture, reference is made apparently to the same class, who are to be treated in dwellings adorned and fitted up to correspond with their own homes and surroundings, while the disturbed and maniacal are to be separated and isolated from the world in substantial prison-like structures, as he says: "Moreover, as everything should be arranged to keep in the patient's mind feelings of home as much, and to remind him of the hospital as little, as possible, these dwellings for the mild should be not only separate from, but out of sight of, the stronger and more forbidding house, which might call out their painful sympathies, or be an ever present warning to them of their liability to change for the worse, and, a standing threat that if their disease should take an unfortu-

nate turn, and they become excited, they must be removed to that place of stricter confinement."

We do not understand this dread of the use of the word hospital. The patients who seek relief from their malady are sick people, and are placed in institutions for medical treatment, and not to be boarded out, or for custodial care. And experience teaches that the more fully this idea is impressed upon the persons treated, the more heartily do they second the efforts made to benefit them; and the more thoroughly they appreciate their condition, the greater is the hope of a speedy recovery. They should rather be made to look upon the hospital as a means to accomplish so desirable an end. The pleasant names for "the strongly built and more forbidding house" "as grove house, valley house, orchard house, &c.," if employed, would not cover up or conceal the fact that they were for the residence of the noisy and disturbed, and after this became known, they would be suspected, and the more hated for the very deception employed. Care should rather be taken to remove from the wards everything that is mysterious and unpleasant or forbidding; so that, if necessary, the change from the quiet to the disturbed ward may be made without attracting the attention of the patient, or of friends, to the broad distinction of condition. This would reduce the moral effect to the minimum.

Again, the larger number of those who can enjoy such surroundings as are pictured, are either cases convalescing from acute attacks of disease, and who will soon return to their homes, or the chronic and harmless who can be retained at home. This latter class the public do not propose to retain in institutions. We should be pleased if it were possible to suggest some plan of hospital building, more economical and better

than the one now in use, but we do protest against any plan which has for its only recommendation the elevation of a class to the detriment of the masses, or in the theorizing of those without experience in the general treatment of the insane.

The other articles are on "The Use and Abuse of Opium;" "The Effects on the Health of the Use of Sewing Machines moved by Foot Power;" "Slaughtering, Bone Boiling and Fat Melting;" "Vegetable Parasites, and the Diseases Caused by their Growth, upon Man;" "Small Pox in Massachusetts" and a health report from various towns of the State. We commend the report to the medical profession, as a valuable contribution tending to promote the health of the community and hygienic science.

Transactions of the Twenty-first Anniversary Meeting of the Illinois State Medical Society, held at Peoria, May 16, 1871.

The report is printed on poor paper, and is illustrated by numerous badly executed wood cuts. The subject-matter is good, and should have been put in a more attractive form to obtain readers beyond the circle of those personally interested.

Annual Report of the Commissioners of Emigration of the State of New York: 1872.

This gives in detail the action of the Commissioners in the reception and transfer of emigrants arriving at New York. It also describes the working of the various charities under the control of the Board.

First Annual Report of the Ontario Institution for the Deaf and Dumb, at Belleville, Ont.: 1871.

This is a new institution which has been in successful operation for one year. It accommodates 100 pupils.

Quarterly Summary of the Transactions of the College of Physicians of Philadelphia: February, 1872.

Forty-Sixth Annual Report of the Masssachusetts Eye and Ear Infirmary: 1872.

Notes on Fluid Extract of Senega, Cantharides, and a Blistering Liquid, Officinal Extract of Jalap, Rhubarb, Pareira, Litmus Paper, Commercial Bi-Carbonate of Soda and Chloral: by EDWARD R. SQUIBB, M. D. [Reprinted from the Proceedings of the American Pharmaceutical Association: 1871.]

Report on Opthalmology, for 1871. HENRY D. NOYES, M. D. [Reprinted from the *New York Medical Journal*, March, 1872.]

Amnesic and Ataxic Aphasia: T. M. B. CROSS, M. D. [Reprinted from the *American Practitioner* for April, 1872.]

Report of the Manhattan Eye and Ear Infirmary: New York.

Mechanical Surgery: E. D. HUDSON, M. D. New York.

Defense of Taxis in Strangulated Hernia: C. C. F. GAY, M. D. Buffalo, N. Y.

Report of the Board of State Commissioners of Public Charities Concerning the Management of the Dispensary and Hospital Society of the Women's Institute of New York City, and the Testimony taken by the Board: 1872.

Synopsis of Student's Microscopes: by R. H. WARD, M. D. [Reprinted from the *American Naturalist*, June, 1872.]

Report Submitted to the Trustees of Cornell University on Mr. Sages' Proposal to Endow a College for Women. By ANDREW D. WHITE, Chairman of the Committee: 1872.

SUMMARY.

CONIUM IN THE TREATMENT OF ACUTE MANIA.

BY J. CRICHTON BROWNE, M. D., F. R. S. E.,
Medical Director, West Riding Asylum.

The views of Dr. Browne set forth in this article are fully sustained by our experience in the use of conium. We have for some years been making special investigation with this drug, and have found it a most efficient remedy. We have used both the fluid extract of the leaves and of the seed, made by Dr. E. R. Squibb, of Brooklyn, the latter being preferred. For some months past one of the medical staff of the Asylum has been making observation and notation of cases for publication, the results of which will be presented at some future time: EDS.

It has been lately intimated that the sedative treatment of mental diseases, characterized by excitement, is neither necessary nor desirable. Dr. Maudsley has hinted that recovery is retarded rather than hastened when sedatives are had recourse to; and has questioned whether "the putting the nerve-cells of the patient's brain into chemical restraint, so to speak," by the use of such remedies, "does really benefit them." The arguments which have been thought to justify these speculations have not yet been fully set forth; and, as they must doubtless be of a weighty nature, it may seem rash, when only partially acquainted with them, to dispute the propriety of the practical suggestion which has been founded upon them. That practical suggestion is, however, so thoroughly opposed to the teachings of experience and of modern pathology, and derives so little feasibility from the insinuations by which it is accompanied, that it challenges the immediate examin-

ation of those who are engaged in the treatment of insanity, and who are anxious to be able to give some reason for the therapeutical faith that is in them.

To prove that sedatives have been highly valued in the treatment of mental excitement from the very earliest times when medical science was brought to bear upon insanity, would not, perhaps, count for much in these days in which the wisdom of ancestors is disallowed in anything less obvious than the invention of the wheelbarrow, were it not that, in the present instance, the wisdom of our ancestors is in happy accord with that of ourselves. Sedatives are still all but universally employed in lunatic asylum practice, and have not as yet forfeited in any degree the confidence of those who are most familiar with them. And that confidence is by no means so blindly empirical as is supposed by Dr. Maudsley, who is certainly in error in asserting that "no one has ever yet tried the experiment of treating one case of acute insanity without giving any sedative whatever, and of treating another case as nearly like it as possible with sedatives, and of observing the result." I have no hesitation in saying that that experiment has been repeatedly instituted, and has led to a conviction, in those who have tried it, in all respects favorable to sedatives. In two cases in which I myself applied that very test, I found that a rapid recovery took place in that in which a sedative was used, and that protracted excitement and a tardy convalescence had to be encountered when everything was trusted to the course of nature. It does certainly excite surprise to notice a case of puerperal mania, in which recovery occurred in *four months*, referred to by Dr. Maudsley as an instance of the success of a non-sedative treatment.

That sedatives have the power of subduing mental excitement is not denied, so that the question is simply whether it is judicious to employ that power. Now mental excitement is a sure indication of disordered activity in the delicate nerve-cells and tissues of the cerebrum; and not only so, but it is a rough gauge of the severity of those encephalic changes of which it is the outward expression. When the excitement is mild in character, interrupted in progress, or of brief duration, we infer that it coincides with mere functional derangement. When it is intense in type, of firm persistence, and of long continuance, we conclude that it betokens some organic alteration. Whether, however, it is intense or mild, of organic or functional origin, we know as a certainty that mental excitement corresponds with morbid processes or changes which have an enfeebling influence upon the structures affected by them, and

which may eventuate in permanent weakness or decay of those structures, or in systemic death. We know further that the evil consequences of that destructive metamorphosis upon which excitement depends are serious and far-reaching just in proportion as that metamorphosis was extensive and protracted. Where the waste is rapid and the excitement fierce, exhaustion and death are apt to ensue; where they are protracted and uncontrolled, dementia or relapses may be anticipated. Only where they are moderate and short-lived can complete recovery be looked for. The testimony of those who have had large opportunities of observing insanity will establish that in acute mania, life and the restoration of reason are jeopardized in proportion to the intensity and duration of the mental excitement, which constitutes its chief symptom, and of the histolitic processes the presence of which that excitement betrays. My own investigations have satisfied me that there is a constant relation in general paralysis between the amount of maniacal excitement by which its progress is marked and the period at which death supervenes, as well as the extent of the pathological changes which are essential to the disease. In recurrent mania it is acknowledged that every attack of mental excitement leaves an increased weakness of the brain behind it, and that thus it is that the intervals between the attacks are gradually shortened.

The above considerations, without any multiplication of examples, make it evident that the cerebral conditions upon which mental excitement depends are most pernicious in their immediate and remote effects. It would seem to follow, as a necessary corollary, that it is of the first importance, as far as possible, to reduce the severity and curtail the duration of these cerebral conditions, so that their effects may be mitigated. This corollary, however, does not secure assent. Dr. Maudsley asks if it is a proper thing to stifle excitement, which suggests the inquiry if it is a proper thing to stifle fire. Both, when they have overleapt their ordinary boundaries, hurry to destruction. The nerve-cells of the brain have no innate tendency to energize in a beneficent and healthy manner. In education they have to be stimulated in some directions and repressed in others. In disease they do not develop any new principle of spontaneous rectification. Insanity is not a self-limited disorder, running a determinate and inevitable course. On the contrary, it may be arrested or indefinitely prolonged. And even if it were self-limited, that would be no reason for abandoning all attempts to modify its progress. Pyrexia may be fitly com-

pared with mental excitement, which is, as it were, the fever of the mind. In many bodily diseases the prognosis may be founded on the height of the pyrexia, as in mental diseases we have seen it may be drawn from the height of the excitement. Well, what is the modern treatment of pyrexia? Why, to reduce it by all possible means. Those who have made acquaintance with the writings of Jürgenson, Leibermeister, and Ziemssen in Germany, and of Dr. Wilson Fox in our country, will allow that certain fevers have had a new hopefulness conferred upon them by the practice of applying a most powerful sedative—viz., cold water—to the burning skin. All observers agree as to the inestimable value of this method of treatment in diminishing mortality, and in altogether averting certain symptoms of a distressing kind. Well, sedatives are to the excited mind what cold water is to the fevered body. They cool the heated faculties; they soothe and comfort the agitated brain; they chemically restrain the exuberant nerve-cells. Chicago would not have been desolated had adequate restraint been exercised on the conflagration at its outset; and many an inflamed mind would be saved alive could the excitement which consumes it be got under at once. The sedative treatment of excitement is not contra-indicated by any special pathological condition. Whether that excitement originates in excessive functional activity of the vesicular neurine, in defective nutrition of that tissue, in peripheral irritation, or in alterations in the quantity or quality of the blood-supply, well-chosen sedatives may always with other remedies be suitably employed. Dr. Maudsley, of course, repudiates all this. "Let a person," he says, "be made artificially lunatic by belladonna. Who would, if called to treat him, prescribe a dose of chloral or a dose of opium?" Dr. Maudsley must have forgotten the researches of Anderson and Bell, and the fact that opium has actually been successfully used as an antidote to belladonna, or he would not have asked such a question. When mental excitement is indubitably due to blood-poisoning, we should no more on that account refrain from attempting its subdual by sedatives than we should on the same ground hesitate to staunch a hæmorrhage or to relieve pain. The *materies morbi* is not eliminated in incoherence, delusions, and muscular agitations, but is probably fed and reproduced by the disintegration of tissue which these promote.

The objection that sedatives cut short excitement by inducing dementia, and not only restrain but disable the nerve-cells, will be refuted by a reference to experience. The facts that, notwithstand-

ing the calumnies which have been uttered against them, they are still held in high esteem by sagacious practitioners, and that an addition to their number is hailed as a boon to humanity, ought to indicate that the tranquility which they create is not so deadly and deceptive as has been represented. In this paper will be found recorded a number of cases in which, under the use of an arch sedative, unmistakable improvement, not only in weight, appetite, and temperature, but in mental condition, took place, in which primary excitement was calmed and secondary dementia curtailed. Another opportunity will be taken of combating some statements derogatory to opium which have been made, and of reporting results differing from those which Dr. Clouston has obtained in his experiments with that drug. The analogy drawn between the prejudicial effects of mechanical restraint applied to the limbs and the action of sedatives can hardly be intended as a serious argument. To say that because strait-waistcoats did harm sedatives can do no good, would be as if to contend that shutting off the steam must be futile because holding on by the fly-wheel had been found ineffectual.

From what has been now said it seems to result that mental excitement is assuredly the special indication for the use of sedative remedies. To this, however, it must be added that there are several varieties of mental excitement and several varieties of sedatives, and that it is in the nice adaptation of the latter to the former that successful treatment consists. If a particular sedative has been tried in a particular case of mental excitement and found inefficacious, that is a reason, not for casting discredit upon the whole class to which it belongs, but for doubting the wisdom of its selection. If a particular sedative of much potency has been resorted to in all cases of excitement without distinction, and has signally failed to do good in a majority of them, then the proper conclusion would seem to be, not that sedatives are useless, but that their indiscriminate application is foolish.

In a number of investigations having for their object the discovery of some principles by which the choice of sedatives in cases of excitement might be guided, I have been led to the conclusion that conium—a very old remedy with a good modern reputation—is the sedative, alone or in combination, which above all others is best suited for the treatment of that variety of excitement which we call acute mania. A remark of Dr. Harley's, in his admirable work "On the Old Vegetable Neurotics," first suggested to me that mania might be favorably influenced by that drug. As, how-

ever, my earliest experiments with it were, from causes which shall be hereafter explained, almost barren of results, I yielded to the conviction that Dr. Harley was mistaken, and that conium could not exert any beneficial influence upon the higher ideational nervous centres. Remembering that the mind of Socrates remained unclouded to the last—he actually recollected his debt to the doctor when *in articulo mortis*,—and that Dr. Harley's observation pointed only to the influence of conium on the motor centres, I conceived that the cerebral hemispheres were beyond its reach; that it might act very well in chorea, paralysis agitans, and convulsions, but was impotent in mental aberration. Circumstances, however, having led me to review that conclusion, and to investigate the properties of conium with a more thorough and searching procedure than that formerly employed, I soon came to perceive that it is most beneficial in mania, and that it is so chiefly by virtue of that action on the motor centres which Dr. Harley, Dr. Bennett, and others have demonstrated. It will be at once recognized that motor excitement is an important and constant element in mania. Exuberant locomotor and vocal spontaneity are often amongst its earliest harbingers. The novice in that disease hurries from place to place, trembles or chatters incessantly long before the movements of the limbs or tongue can be connected with any morbid sensation or emotion. A vague impulse to activity with an overflow of vigor, dependent upon irritation of the motor centres, is all that can be recognized at this stage. But the rapid movements in which this impulse and overflow are displayed tend, by their nature and physiological concomitants, to excite the cerebral hemispheres and involve the mental functions. The mild delirium described by Coventry Patmore—the most domesticated although certainly not the tamest of poets—as the result of the nineteenth century waltz, is an example of the facility with which quick movements may pass into quickened thoughts and feelings—a process of which innumerable illustrations are contained in the history of the ecstatic worships of antiquity, of tarantulism, and of the convulsionnaires in more recent times. Thus the restlessness and loquacity of incipient mania favor emotional agitation, which again stimulates to muscular exercise, and so on through various stages of mutual exasperation until furious madness is reached. After this climax is attained, and indeed throughout the whole progress of acute mania, the muscular element plays an important part. If we turn to the best descriptions of that disease, we shall remark that they all dwell on the extraordinary mobility

which characterizes it; that they enumerate commotions of the muscular apparatus, such as tremors or jactitations of the limbs, tossings in bed, wild gestures, distortions of the countenance, violent movements, cries, and vociferations, as among its most invariable symptoms. Some of them, indeed, point to even more special affections of the motor organs. Prichard says:—"Notwithstanding this constant exertion of mind and body, the muscular strength of the patient seems daily to increase; he is able to break the strongest bonds, and even chains; his limbs seem to acquire a remarkable nimbleness and pliability, and a singular aptitude of performing movements and actions which appear almost supernatural." Griesinger, while denying the development of any extraordinary strength in mania, adds that "it is correct and very remarkable that the patients can continue, often for a very long time, to make use of their muscular power, and to an extent which far surpasses their capability during health." In several cases in which death has ensued from exhaustion after, or rather during mania, I have observed that the corpora striata have participated in that appearance of vinous staining, or purple blotchy discoloration, which is occasionally observed in the cortical layers of the hemispheres and adjoining medullary substance under such circumstances.

Seeing, then, that the motor factor forms so large a proportion of the integer of mania, it is obvious that if it can be subtracted, an important step is made towards the complete resolution of the disorder. If muscular tranquility can be insured in mania, there is good ground for hoping that mental calmness will speedily follow. If the limbs and tongue can be laid at rest, a predisposition to sleep is created. In health we all know that closed eyelids, the recumbent posture, general stillness, and a sense of weariness are most conducive to the approach of the "sweet restorer;" and in disease the same holds good to a great extent. In mania, if bodily quiescence is once secured, the chances are that sleep and improvement are not far distant. Now conium gives us the power of ensuring this bodily quiescence that is so eminently desirable. It soothes and refreshes the irritated or exhausted centres of motor activity. It exerts a powerful control over the corpora striata and whole motor tract to the periphery of the centrifugal nerves, allays restlessness and agitation of the muscular system, and thus clears the way for sleep, which is only waiting an opportunity to assert itself. Dr. Harley's investigations establish beyond cavil that the earliest physiological effects of conium are—sensations of weight

and weariness in the legs, dimness of vision from impairment of power in the muscles of the eyeball, giddiness, general languor and drooping of the eyelids; and that its later effects, when given in full doses, include strabismus, double vision, dilatation of pupils, prostration of strength, and complete muscular repose merging into paralysis, without any failure of memory, confusion of mind, or emotional disturbance. They also prove satisfactorily that, in convulsions and spasmodic diseases, in chorea, paralysis agitans, cramps, and indeed in all morbid conditions in which there is much excitement of the motor centres, much benefit may be derived from a judicious use of conium. Now these physiological actions of conium, and these therapeutical uses, alike indicate that it is upon the motor tract that its influence is first exerted, and that it is from this tract that it is propagated in certain directions. The rapidity with which the effects of conium are diffused—one might almost say flashed—throughout the system,—together with the fact that they are often accompanied by a deep-seated aching pain in the forehead, suggests that of the motor centres the corpora striata are those principally affected. But, wherever the affection of the motor centres may be inaugurated, there can be no question that, from first to last, that affection is of a tranquilizing character. Conium soothes and mollifies the motor centres, especially when they are irritated or excited, and does not, as has been alleged, disastrously depress muscular activity. The recovery from its effects is as the waking from invigorating slumber. It is as if a tonic had braced the active powers. No weariness, weakness, nor oppression remains. And hence its great value in mania. It produces, if we may so say, a salubrious paralysis, which slackens mental speed, invokes restorative sleep, and leaves behind it an enduring impression upon any tendencies which may exist to motorial extravagance, without entailing exhaustion or debility.

The virtues ascribed to conium in the treatment of mania have been abundantly shown forth in the trials of it which I have made in the West Riding Asylum. As I before announced, it was employed here in the first instances without affording any encouraging results. That was in 1869; and, as I now know, the experiments then made with it were absolutely nugatory because the preparations used were probably inert, and the doses administered certainly insufficient. In the beginning of last year, however, experiments with it were again commenced, and the results of these only require to be stated to secure the recognition of their importance. Since the 23d of February, when these experiments were begun,

up to Nov. 1st, (beyond which I have thought that it would not be fair, in the mean time, to carry my examination of the observations made,) twenty-eight cases of mania in all—twenty-five of acute mania and three of acute delirious mania—have been treated from the first with succus conii, the only preparation which can be employed with confidence. Of the twenty-five cases of acute mania, twenty-three have, up to the present date, (Jan. 1st, 1872,) been discharged recovered; one (a woman, Elizabeth N——, admitted July 31st,) has suffered a relapse; and one (a man, Thomas R——, admitted July 17th—second attack,) is still maniacal, but exhibits decided signs of improvement. Of the three cases of acute delirious mania, one has been discharged recovered; one (Hannah E——, admitted July 13th,) is still under treatment, but is improving steadily; and one (Mary Emma A——, admitted April 24th) terminated in death. In the case, however, in which there was a fatal issue, it ought to be mentioned that at the time of admission there were large bed-sores over the sacrum, ulceration of the lips and mouth, a crop of boils over the body, and a state of profound exhaustion from refusal of food. These figures must, I think, be regarded as eminently satisfactory, and as affording strong ground for believing that the dangers which ordinarily beset the treatment of mania—namely, death from exhaustion, consecutive dementia, indefinite protraction, and relapses—are in great measure obviated by the conium treatment. To give these figures just weight, it is necessary to add that the cases of acute mania in which the conium treatment was tried were not specially selected, but that all instances of that disease admitted, after the date mentioned, were without exception submitted to it.

With the view of determining the relative duration of cases of acute mania treated with conium and with other remedies, I have contrasted twelve cases from each category. As the result of that contrast, I find that twelve consecutive cases treated from the first with conium, admitted subsequent to Feb. 25th, 1871, and since discharged recovered, had an average duration as measured by residence in the asylum, of 102 days; whereas twelve consecutive cases treated with other remedies, such as bromide of potassium, cannabis indica, chloral, and digitalis, admitted subsequent to October 1st, 1871, and since discharged recovered, had an average duration, as measured by residence in the asylum, of 150 days. This shows a balance of 48 days in favor of conium. It will be seen, from the cases reported below, that when conium was used, that period of convalescence which it is thought prudent to interpose

between the date when recovery might be called complete and the date of discharge from the asylum was in no instance unusually shortened. In some cases it might be thought that it was unnecessarily prolonged. So rapid and decisive were the beneficial effects of the remedy that it was feared at first they might prove transitory, and that, as is not seldom the case when recovery is sudden, a relapse might be looked for. Experience having now taught that this fear is groundless, a considerable curtailment of the term of medical supervision may be henceforth safely conceded. Indeed, so prompt is recovery, as a rule, under the conium treatment, that it appears that the necessity of removal to an asylum may be obviated in some cases of acute mania, if it is had recourse to, and judiciously conducted, in their initial stage.

The curative effects of conium in acute mania are not limited to those cases in which that remedy is used from the outset of the disorder. Eight patients in this asylum, in whom other methods of treatment had been first employed, have derived marked advantage from the substitution of conium for other drugs.

To indicate the value of conium in acute mania more conclusively than can be done by general statements or numerical results, I have drawn up epitomes of some of the cases in which its therapeutical worth has been clearly exemplified in this asylum. Before adding to these epitomes, I have only to express my conviction that the conium treatment of acute mania will speedily recommend itself, to those who use it rightly, as the most efficacious mode of dealing with that form of mental disease. In order, however, to secure its benefits, two conditions must be observed: firstly, the preparation used must be good and active; secondly, the dose administered must be adequate in amount. The succus conii is certainly the most trustworthy preparation of the drug, and is that which has of late been used exclusively here. Even the succus, however, varies in activity in an extraordinary degree. Some of it is absolutely inert. That which has been found most reliable by me has been obtained from two of the London houses named by Dr. Harley, from an Edinburgh and from a German firm. As to the doses required, I can strongly corroborate Dr. Harley's assertion, that they must be sufficient to produce the physiological action of the drug in order to prove beneficial in disease. I can also support his conclusion, that the effect of conium is inversely as the motor activity of the individual to whom it is given, This being so, it must be evident that in acute mania, in which motor activity is at the maximum, very large doses will be essential. I have

given a woman laboring under acute mania as much as two ounces of succus conii at one dose, and have repeated this every four hours for two days. This was, however, an extreme case, and the patient had been gradually habituated to the use of the drug. As a rule I have commenced with two drachms of the succus, for a woman, and three drachms for a man; and have rapidly increased the dose until I have noticed some cessation of restlessness, or signs of lassitude or weakness of the limbs. It is rarely that a dose of one ounce or ten drachms requires to be exceeded; and sometimes improvement begins with the very first administration, in which case no increase of quantity is necessary.

Case 1.—Lydia F——, aged thirty-five, house-wife, from Barnsley, admitted March 31st, 1871, having been insane for one month. Is a member of a family of drunkards; her sister hanged herself. When admitted she was in a state of violent maniacal excitement and great exhaustion, groaning, shouting, and struggling; pupils dilated and unequal; face flushed; refuses food, and is sleepless. Ordered succus conii, two drachms three times a day.—April 2nd: Much quieter; takes her food and sleeps well.—4th: Perfectly calm, and employs herself in sewing; pupils contracted and sensitive.—May 16th: Discontinue medicine.—June 20th: Is passing through a protracted stage of slight dementia characterized by loss of memory and energy.—Aug. 22nd: Discharged recovered. —Weight: March, 100 lbs.; April, 115 lbs.; May, 124 lbs.; June, 139 lbs.; July, 138 lbs.; August, 141 lbs.

Case 2.—Sarah S——, aged thirty-seven, married, house-wife, from Doncaster, admitted April 24th, 1871. Has been intemperate; became insane a week ago. Is in a state of extreme manaical excitement; talkative, restless and violent; pulse 120; pupils of average size, but sluggish; tongue and lips dry and covered with sordes; muscles hard and rigid. Ordered two drachms of the succus conii three times a day.—May 8th: Quiet and rational; pupils widely dilated; pulse 80.——11th: Convalescent. Discontinue conium.—July 7th: Discharged recovered.—Weight: April, 94 lbs.; May, 94 lbs.; June, 109 lbs.; July, 112 lbs.

Case 3.—Lavinia B——, aged thirty-five, widow, domestic servant, from Huddersfield, admitted April 25th, 1871. Had a previous attack nine years ago. No cause known for present attack, which commenced a week ago. Is highly excited, shrieking, whistling, and fighting; sleepless and requires to be fed. Ordered half a drachm of tincture of cannabis indica and a drachm of bromide of potassium thrice daily.—April 29th: No better; is very

noisy, and has not slept since admission; kicks and bites all who approach her; face and ears much flushed; pupils contracted; eyes injected; lips and tongue dry; pulse 126. To omit previous mixture, and take two drachms of succus conii every four hours.—30th: Quieter; face less flushed; pulse 92.—May 1st: Has slept well all night, but is again greatly excited; takes her food well. Ordered four drachms of the succus.—2d: Has again slept well, and is now much quieter. To take the conium only twice a day.—4th: Quiet, but confused in her ideas. Complains of pain, weakness, and numbness in her limbs.—6th: Convalescent.—July 5th: Discharged recovered.—Weight: May, 126 lbs.; June, 128 lbs.

Case 4.—George H——, aged twenty-four, married, laborer, from Hunslet, admitted June 3rd, 1871. Was never before insane. Was attacked three days ago, and has since been violently excited. Is fiercely maniacal; very restless and combative; assaults those around him; shouts out oaths and blasphemies; fancies that he is to be buried alive and is fighting with the devil; strips himself naked and destroys his clothes. Is a stout robust man, and enormously strong, florid complexion, brown hair, which stands out from the head as if bristly; muscles start and tremble as if from eagerness; conjunctivæ injected; mouth dry; pulse 108.—June 4th: Has passed a restless night and is most unmanageable. To take three drachms of succus conii every four hours.—5th: Still maniacal. Five drachms of conium every four hours.—6th: Much quieter, though still unable to converse; restless, and given to strip himself.—8th: Quiet and rational.—14th: Convalescent; complains of a strange feeling of lightness in the back of his head, and of general weakness. To omit the medicine.—August 24th: Discharged recovered.—Weight: June, 167 lbs.; July, 165.

Case 5.—Elizabeth R——, aged forty-seven, house-wife, from Wakefield, admitted June 3rd, 1871. No previous attack. Has been insane three weeks. Was first depressed for a fortnight, then excited. A maternal aunt died in this asylum. Is violently excited, raving incoherently. Has not slept for some time, and has refused food. Face flushed; tongue red and raw; fed with the stomach-pump; two drachms of succus conii being administered by that means also.—June 4th: Has had several hours' sleep, and is more tranquil; answers intelligently, but can not keep her attention fixed; takes her food. To have three drachms of succus conii thrice daily.—5th: Is more excited, very garrulous and mischievous; bowels confined.—6th: Has slept well during the night, but is still excited and restless. To take four drachms of the suc-

cus conii every four hours.—7th: Much more composed; talks rationally, but voluminously.—23d: Convalescent.—July 23d: Discharged recovered.—Weight: June, 120 lbs.; July, 130 lbs.

Case 6.—Joseph H——, aged thirty-five, married, blacksmith, from North Brierly, admitted March 7th, 1871. His father died of paralysis; a paternal uncle and aunt were insane. Has suffered from domestic anxieties. Became excited eight days ago, after ten days of sullenness and depression. Is very restless and talkative; can not remain still for a second; says that he is St. Paul. Is in fair bodily health; neck bears marks of recent blister.—March 18th: Extremely violent. To take six grains of ergotine thrice daily.—23d: The excitement has passed off, but the patient is silent and stupid.—30th: Still quiet. To omit medicine.—May 22d: Has again become dangerously excited. To repeat ergotine. June 11th: No better. This morning he sprang out of bed naked, and jumped through a glass door without so much as scratching himself. Ordered to leave off ergotine, and to take four drachms of succus conii thrice daily.—13th: Declined food and medicine, and remained maniacal until last evening, when he was fed by means of the stomach-pump, the succus being given at the same time. Passed a better night, and is now more tranquil; takes food and physic voluntarily.—15th: Much improved.—16th: Comparatively rational: quiet in his demeanor.—August 18th: Is slowly recovering from a state of partial dementia.—October 3d: Discharged recovered.—Weight: April, 134 lbs.; May, 130 lbs.; June, 133 lbs.; July, 133 lbs.; August, 137 lbs.

Case 7.—Maria P——, aged thirty-seven, married, house-wife, from Saddleworth, was admitted June 5th, 1871. Has had two children, the youngest of whom is now seventeen years old. No heredity; of temperate habits. Was under treatment in this asylum for an attack of acute mania from February 17th to October 9th, 1867. Grew excited eight days ago, after a short period of depression. Is now wild and ungovernable, dancing, singing, and raving. Seems to delight in movements and gesticulations, and puts forth much strength if interfered with. Ordered two drachms of succus conii every four hours.—June 6th: Half an hour after taking the medicine she becomes lethargic, then drowsy, and remains so for an hour. If roused, however, she is as noisy and exuberant as ever. Pupils of average size and equal; pulse 110; face pale.—7th: Quieter than when admitted, but when disturbed breaks out into maniacal excitement; any noise increases her vehemence.—16th: Quiet, but mischievous in a good-humored jocular

way; becomes excited whenever there is the least noise in the ward. —July 2d: Has gradually calmed down. To omit the medicine.— August 8th: Quite convalescent.—30th: Discharged recovered.— Weight: June, 106 lb.; July, 126 lbs.; August, 145 lbs.

Case 8.—Fanny D——, aged thirty-five, married, house-wife, from North Brierly, was admitted May 8th, 1871. Her youngest child is fifteen months old. The violent death of a brother has preyed on her mind. A week ago she became suddenly excited, and has since been uninterruptedly noisy, violent, and destructive. —9th: Very noisy, talks incessantly and incoherently, and attitudinises. There is a diastolic murmur at the base of the heart. She is greatly emaciated, but active and vigorous. Ordered three drachms of succus conii thrice a day.—12th: Now composed and rational.—23d: Convalescent.—June 2d: Slightly despondent.— July 25th: Again quite convalescent.—August 1st: Discharged recovered.—Weight, May, 104 lbs.; June, 107 lbs.; July, 114 lbs.; August, 122 lbs.

Case 9.—Ann S——, aged forty-five, single, house-wife, from Bradford, was admitted May 12th, 1871. After slight mental depression of a year and a half's duration, she became excited ten days ago. Is now talking perpetually in a loud, harsh voice, and will not remain in one place. She apparently understands what is said to her, but replies in unintelligible jargon. Face and head much flushed; pupils contracted; pulse 90; skin cool; tongue very foul. Ordered two drachms of succus conii every fourth hour. —16th: Still very maniacal; requires to be fed with the stomach pump. The dose of succus conii to be increased to four and then to six drachms.—18th: Now takes her food voluntarily; is much quieter, but talks incoherently.—19th: Quite rational; medicine only twice a day.—23d: Improving. To omit the medicine.— June 20th: Convalescent.—Sept. 4th: Discharged recovered.— Weight: May, 112 lbs.; June, 126 lbs.; July, 130 lbs.; August, 137 lbs.

Case 10.—Elizabeth H——, aged forty-three, married, house-wife, from Huddersfield, admitted May 30th, 1871. Was insane for a short time three years ago. Has had six children; the youngest is now five years old. A brother and one of her own children have died of epilepsy, and one sister has had puerperal mania. The present attack commenced eight weeks ago, and has been characterized by gradually gravescent excitement.—31st: Excited and out of bed all night. Will not answer questions, and is very restless and fidgety. Fairly nourished. Skin of the face and fore-

arms bronzed. Ordered two drachms of succus conii three times a day.—June 1st: Has been quiet during the night, and continues so this morning.—9th: Convalescent.—Sept. 12th: Would have been discharged some time ago, but has been detained with her own sanction because of an attack of hepatic disease.—Nov. 7th: Discharged recovered.—Weight: June, 124 lbs.; July, 132 lbs.; Aug., 131 lbs.; Sept., 134 lbs.; Oct., 131 lbs.; Nov., 135 lbs.

On a future occasion I hope to have an opportunity of recording the results obtained in the treatment of certain mental diseases by conium in combination with opium and hyoscyamus.—*London Lancet, June*, 1872.

Case of Disease of the Brain—Left Hemiplegia—Mental Affection.—[Under the care of Dr. Hughlings-Jackson.]—A patient, 56 years of age. His mind is much impaired, but he has mind enough to frame delusions. A recent fancy is that he wishes to be killed. The most striking feature in his case has been an inability to recognize places and persons. At one time he did not know his own wife; he gave his watch away, and having wandered from home was unable to find his way back. But at the present time he is better, and can name things he sees in pictures, and can read. There seems now to be only a general imperfection of mind, hebetude, and slowness. His wife reports that he has called things by wrong names. Such blunders may arise either from non-recognition of the thing to be named, or from inability to find the name of it.

He has recovered from left hemiplegia—a symptom which, in the vast majority of cases, points to disease of the right side of the brain. In many cases of left hemiplegia there is no striking mental affection. But this patient's palsy was of the rarer kind, in which the leg is more affected than the arm. Trousseau has spoken of the evil omen of cases of hemiplegia in which the leg suffers more than the arm—or, rather, of cases in which the arm recovers, the leg remaining paralyzed. He appears to refer—in part, at least, to mental affections. Dr. Hughlings-Jackson supposes that the lesion in his patient is in the right posterior lobe. As there has been severe earache of the right side, and as there is deafness of that side, the lesion is possibly cerebral softening or abscess from plugging of veins. The hemiplegia came on after the earache, and after the onset of the mental symptoms: it was transitory, lasting about a fortnight.

From anatomical facts Dr. Hughlings-Jackson is led to believe

that the "important" part of the right hemisphere is the posterior lobe, whilst the "important" part of the left is the anterior lobe. But it must be remarked that in Trousseau's patient, and in a similar case from Dr. Ramskill's practice mentioned by Dr. Bazire, the hemiplegia was of the *right* side. However, Dr. Hughlings-Jackson thinks that there is more often mental affection, other than affection of speech, in cases of left than in cases of right hemiplegia, and particularly when the leg suffers more than the arm.

That the anterior and posterior lobes have different functions is certain as the convolutions of the two cerebral regions have different structure (Lockhart Clarke). Some years ago, Dr. Charlton Bastion expressed his opinion that the posterior rather than the anterior lobes are concerned in the highest intellectual operations. The following statement by Rosenthal is strongly in favor of Bastion's opinion:—"In the case of new growths in the posterior lobes the psychical disturbances are incomparably more frequent than in that of tumors of the anterior or middle lobes.

Dr. Hughlings-Jackson grants that the clinical evidence as to the greater importance of the *right* posterior lobe in mental operations is slender; but the anatomical facts (Gratiolet, Broca, and Barkow) are strong. (These facts he has several times referred to when speaking of the question of the supposed greater importance of the *right* posterior lobes in this journal, August 22, 1868, pp. 208–9; September 26, 1868, p. 358.) And the hypothesis may have at least this value: that it will lead to a careful study of the *kind* of mental affection—when there is any—which attends hemiplegia, especially when the leg is the limb more affected. We have many facts as to the kind of mental affection (aphasia) which so often attends lesions in the region of the *left* corpus striatum, and it is legitimate to inquire if there be not symptoms as *special* from lesions in the neighborhood of the *right* optic thalamus. The former, when speech is *lost*, consists in an inability to reproduce them in propositional order; but in cases of loss of speech—in chronic cases at least—there is no difficulty in the reproduction of images of objects. The patient can recognize handwriting, although he can not read; he can copy print into writing, but can not express himself in writing; he may be able to play at dominoes or cards. In these operations speech is not concerned; the operation of *another* series of sensori-motor processes is required. Dr. Hughlings-Jackson believes his patient has, or has had, defect in this other series—in the sensori-motor processes concerned in the *recognition* of objects, (not in *seeing* objects,) and in putting images of things

in "propositional order," so to speak. Such a defect, when extreme, would pass as one of imbecility, and in a minor degree as one of "loss of memory." Obviously, the investigation of such cases will be very difficult indeed.

Just as we compare and contrast the effects of plugging of the left and right middle cerebral arteries, so we should compare and contrast the effects of plugging of the right and left posterior cerebral arteries. Dr. Hughlings-Jackson, however, has seen but one case of plugging of the posterior cerebral artery; and as both the right and left, and also the right middle cerebral were plugged, the case, although there was mental affection, is not evidence either for or against the hypothesis he has put forward.

In the above remarks spectral illusions are not spoken of; but these, if the above hypothesis be correct, will depend on disease of the posterior lobe. The *disorderly* revival of images bears the same relation to *inability* to revive images as chorea does to hemiplegia —in the former there will be instability of nerve-tissue, in the latter destruction of nerve-tissue.—*Medical Times and Gazette.*

In the St. Louis *Medical and Surgical Journal*, for March, 1872, we find a communication by Dr. C. H. Hughes, Superintendent of the Missouri State Lunatic Asylum, upon "Psychological Medicine in our Medical Schools." We quote:

Psychological medicine is entitled to, and must occupy, as prominent a place in medical science, as the nervous system holds in anatomy and physiology.

Our medical schools all over the land should awaken to a full realization of the situation, and arouse to the discharge of duty. They should place psychiatry in its proper and legitimate attitude before the whole profession. The nature and treatment of all the various forms of insanity and its jurisprudence, should be thoroughly taught at the fountain source of professional knowledge.

Some of the American schools of medicine have already taken steps to discharge this legitimate and long-deferred duty; among them, the medical department of Harvard University, and one or two of the schools of New York and Philadelphia.

Let us hope that their example may be followed by every respectable medical college in the Union, until diseases of the nerv-

ous system, accompanied with mental aberration, shall become as thoroughly familiar to the general practitioner, as those unaccompanied with derangement of the mind.

We note in this connection the appointment of Dr. J. R. Bauduy, Physician to the St. Vincent Asylum of St. Louis, to the Chair of Psychological Medicine in the Missouri Medical College; and that of Dr. John H. Callender, Superintendent of the Tennessee Asylum, as Lecturer upon Insanity, its Causes and Treatment, in the Medical Department of the University of Nashville.

We regret to learn that Dr. C. H. Hughes has resigned the position of Superintendent of the Missouri State Asylum. He enters upon general practice in St. Louis and will give special attention to the treatment of diseases of the nervous system.

Dr. T. A. Howard is appointed to the Superintendency made vacant by the resignation of Dr. Hughes.

—Dr. Merrick Bemis, the Medical Superintendent of the State Lunatic Hospital, at Worcester, Mass., has resigned, and Dr. B. D. Eastman, an Assistant Physician in the Government Hospital for the Insane, at Washington, D. C., has been appointed to fill the vacancy.

—Dr. John Ordronaux, with whose learning and intellectual gifts the readers of this Journal have occasion to be familiar, is appointed, we are pleased to learn from the *College Courant*, of New Haven, one of the somewhat numerous Faculty in the Law School of the Boston University. If the whole faculty is composed of the same material with Dr. Ordronaux, it will be hard to compete with it. His practical legal training under such a lawyer as the late William C. Noyes, his various reading, his linguistic acquirements,

his fine scholarship, and his ready pen give him advantages that few men have for adorning such a position. It is perhaps more in the way of this JOURNAL to commend him because he is an accomplished medical scholar and medical jurisprudent, and a skilled man in two professions at least, which just now seem to depend very much on each other for assistance and counsel in criminal jurisprudence. It is a good and unusual thing to be competent in both.

To the Editor of the American Journal of Insanity:

CORRECTION.—In an article published in the April number of the JOURNAL on E. H. Rulloff, I said that "Rulloff wrote a criticism upon parts of Prof. Taylor Lewis' edition of one of Plato's dialogues, which interested Prof. Lewis and others in his scholarship."

This I knew to be the case with reference to Prof. Mather, and I had been led by various circumstances to infer that it was also so, as a matter of fact, with reference to Prof. Lewis. He, however, requests me to state that I had no authority from him to make this statement, and assures me that it is incorrect. What interest he ever did take in Rulloff was in a wholly different way as he has shown in an article published in the *New York Independent.* S.

—The Twenty-Sixth Meeting of the Association of Medical Superintendents of American Institutions for the Insane was held in Madison, Wis., on the 28th day of May last. It adjourned to meet in Baltimore, on the fourth Monday of May, 1873. The proceedings of the meeting will appear in the JOURNAL for October.